

Western Mineral Products Company

Procedure B-9A

Revised For Zonolite Division

Outdates February 1, 1966

Revised May 13, 1966

C O N F I D E N T I A L

NON RESPONSIVE



Procedure E-9B
Revised July 13, 1966
Outdates May 13, 1966

C O N F I D E N T I A L

NON RESPONSIVE



Procedure B-90
December 8, 1966
Outdates November 18, 1966

CONFIDENTIAL

NON RESPONSIVE



Procedure B-10
Revised July 13, 1966
Outdates June 28, 1966

C O N F I D E N T I A L

NON RESPONSIVE



Procedure B-11

Revised May 13, 1966

Outdates April 15, 1965

C O N F I D E N T I A L

NON RESPONSIVE



Procedure B-11A
Revised July 22, 1966
Outdates May 13, 1966

C O N F I D E N T I A L

NON RESPONSIVE



Procedure B-12

Revised May 13, 1966

C O N F I D E N T I A L

Outdates November 27, 1963

NON RESPONSIVE



Procedure B-13

Revised May 13, 1966

Outdates February 6, 1964

C O N F I D E N T I A L

NON RESPONSIVE



Procedure B-13A
Revised July 13, 1966
Outdates May 13, 1966

C O N F I D E N T I A L

NON RESPONSIVE



Procedure B-14
Revised July 13, 1966
Outdates May 13, 1966

C O N F I D E N T I A L

NON RESPONSIVE



Procedure B-15

Revised August 31, 1965

Outdates October 7, 1964

ORE: UP-22
UP-24
JM-430

PERL-GRO

(Horticultural Perlite +24)

Expanded material shall be passed over a 24 mesh Sweco Sifter.

Bag in printed or appropriately marked bag. Sewn closure.

Note: -24 material may be packaged as Perl-Trowl if it is
within specifications (see B-5).

Not less than one product analysis each shift.

Bag Content: 4.1 cu. ft.

Bag Weight Limits: 30-36 lbs.

Bag Weight Goal: 32 lbs.

WEMPCO GOALS - PLANT STANDARDS

U.S. Screen Size	8	16	30	50	100	-100
Cumulative % by Volume - Perlite Institute Specs.	15-45	50-98	70-100	85-100	92-100	0-8
Cumulative % by Volume - Wempco Goals	5-35	60-95	85-100	90-100	95-100	0-5
Bulk Weight #/cu. ft. Goals	6+	6+	6+	6+	6+	6+

Production Department

D. P. Wesenberg

DPW/mr

August 26, 1965

RE: JM-610

PRODUCT:

PERL-GRO, COARSE (Mpls. Only)

This product shall be expanded material passed over the 16 mesh Sweco Sifter (+16), packaged in 4 cubic foot bags identified as follows:

1. PERL-GRO, COARSE - use regular PERL-GRO bags, sewn closure and attach a "Coarse" sticker centered neatly below the words PERL-GRO.
2. HORTICULTURAL PERLITE, 1/2 bushel bag - use plain kraft 4 cubic foot bags but do not close the package. This material is for repackaging into 1/2 bushel bags. Six 1/2 bushel bags equal one baler.
3. Several alternatives are available for disposition of the -16 fractions.
 - (a) Aggregate for Spra-Wyt - insert 50 mesh screen and use the -16 +50 for Spra-Wyt if it meets plant standards.
 - (b) Perl-Trowl - insert 24 mesh screen. Use -24 mesh as Perl-Trowl if it meets standards and blend -16 +24 fraction back into Perl-Crete or Perl-Ag.
 - (c) Texture Granules - screen to proper gradation for texture granules provided density standards can be met. If the product is slightly out of standard blend with Texture Granule production.

Bag Content: 4.1 cu. ft.

Bag Weight Limits: 28-32 lbs.

Bag Weight Goals: 29 lbs.

Not less than one product analysis each shift.

WEMPCO GOALS - PLANT STANDARDS

(Plant Goals - Keep Coarse As Possible)

Screen Size	4	6	8	16	30	50
Cumulative % by Volume - Goals	0-5	25-50	70-95	97-100	99-100	0-1
Bulk Weight #/cu. ft. Goals	4+	5+	5+	5+	5+	5+

PRODUCTION DEPARTMENT

D. P. Wesenberg

Procedure B-16
Revised March 6, 1963
Outdates March 15, 1962

ORE: UP-24

DUWE CRETE

Bag is plain bags, sewn closure or cloth
bags as directed.

Bag Content: 4.1 cu. ft.

Bag Weight Limits: 30-34 lbs. (34 lbs. max.)

Bag Weight Goal: 32 lbs.

Not less than one product analysis each shift.

DUWE CRETE

WEMPCO Standards

U. S. Screen Size	4	8	16	30	50	100	-100
Cumulative % by Volume Limits	0	15-30	75-92	90-100	95-100	95-100	0-5
WEMPCO Goals		25	88	96	98	98	2
Bulk Weight #/cu.ft.		5+	5+	5+	5+	5+	5+

PRODUCTION DEPARTMENT
Max F. Corso

December 1, 1960

ORE: UP-22
CM -14 +30*

TILE CRETE

Not less than one product analysis shall be taken
on each shift.

Bag Content: 4.1 cu.ft.
Bag Weight Limits: 36-40 lbs.
Bag Weight Goal: 38 lbs.

TILE CRETE

WEMPCO Standards

U.S.Screen	4	8	16	30	50	100	-100
Cumulative % By Volume	0	0-10	75-90	95-100	98-100		
Bulk Density #/cu.ft.		7+	7+	7+	7+	7+	7+

*To be used only if UP-22 is unavailable. Notify Quality Control
Engineer if ore change becomes necessary.

PRODUCTION DEPARTMENT

Max F. Corso:so

ORE: CM -40
J-M PA 150

VERSI-TEX (Minneapolis Only)
(-24 +50)

Expanded material for Versi-Tex products shall be passed through Sweco Sifter with -24 +50 material placed in sewn bags. The +24 material may be blended back into Perl-Ag provided weight of 4 cu. ft. bag exceeds 24 pounds.

PACKAGING:

Put expanded -24 +50 mesh material in automatic measure Perltex bagging hopper (Keep Hopper Full) and package as follows:

1. Set slide valves on measuring device to deliver one (plus) dry quart 6 oz. minimum into .002 mil printed poly bag. Insert bag into heat seal machine with printed Versi-Tex topper forming tight seal.

Package in 12 pack or 24 pack printed Versi-Tex carton and seal.

Approximate Weight Case: 12 Pack - 5½ - 7½ pounds

Approximate Weight Case: 24 Pack - 12 - 15 pounds

2. Set measuring device to deliver 5 dry quarts (32 oz. min.) into 30 oz. white kraft package. Place 12 packages in appropriately stenciled (Net Weight 20 lbs.) baler, sewn closure.

Approximate Weight: 22 - 25 pounds

3. Fill appropriately stenciled (Net Weight 40 lbs.) 4 cu. ft. bag with 42 pounds minimum weight.

Approximate Weight: 42 - 48 pounds

VERSI-TEX
WEMPCO STANDARDS

U.S. Screen Size	16	30	50	100	-100
Cumulative % by Volume	0	0-8	50-95	93-100	0-7
Bulk Weight #/cu. ft.	7+	7+	7+	7+	7+

Revised April 15, 1965

Outdates May 5, 1963

ORE: CM -40
J-M PA 150

MAUTZ-TEX (Minneapolis Only)
(-24 +50)

Expanded material for Mautz-Tex products shall be passed through Sweco Sifter with -24 +50 material placed in sewn plain bags. The +24 material may be blended back into Perl-Ag providing weight of 4 cu. ft. bag exceeds 24 pounds.

PACKAGING:

Put expanded -24 +50 mesh material in automatic measure Perltex bagging hopper (Keep Hopper Full) and package as follows:

1. Set slide valves on measuring device to deliver one (plus) dry quart 6 oz. minimum into .002 mil plain poly bag. Insert bag into heat seal machine with Mautz-Tex topper forming tight seal. Package in 12 pack or 24 pack plain appropriately stenciled carton and seal.

Approximate Weight Case: 12 Pack - 5½ - 7½ pounds

Approximate Weight Case: 24 Pack - 12 - 15 pounds

2. Set measuring device to deliver 5 dry quarts (32 oz. min.) into 30 oz. white kraft packages. Place 12 packages in appropriately stenciled (Net Weight 20 lbs.) baler, sewn closure.

Approximate Weight: 22 - 25 pounds

3. Fill appropriately stenciled (Net Weight 40 lbs.) 4 cu. ft. bag with 42 pounds minimum weight.

Approximate Weight: 42 - 48 pounds

MAUTZ-TEX
WEMPCO STANDARDS

U.S. Screen Size	16	30	50	100	-100
Cumulative % by Volume	0	0-8	50-95	93-100	0-7
Bulk Weight #/cu. ft.	7+	7+	7+	7+	7+

Production Department

D. P. Wesenberg

PERLITE SPECIFICATIONS FOR DRI-PAC

ORE: UP-21 or UP-19

PRODUCT: Dri-Pac Roof Deck

Customer Specifications

+ 6 Mesh	0-0
+ 8 Mesh	0-15
+ 16 Mesh	40-80
+ 30 Mesh	65-93
+ 50 Mesh	80-96
+100 Mesh	90-100
-100 Pan	0-10
Fractional Density Range	5# to 11#
Bag Weight 4 cu.ft.	28# - 32# (30# standard)
Friability	(7/8" Ram 3" cylinder/1" compaction)
	550# min. 5 minute reading

Plant Standards

U.S. Screen Size	6	8	16	30	50	100	-100
Cumulative % by Volume Limits	0	0-15	40-80	65-93	80-96	90-100	0-10
Cumulative % by Volume Goals	0	5	50	75	90	97	3
Bulk Weight #/cu.ft.		5-11	5-11	5-11	5-11	5-11	5-11

WRW/MS
3-14-69

GENERAL INDUSTRIAL PERLITE

PRODUCT CODE SHEET

CODE WORD: P L A Y G R O U N D
 1 2 3 4 5 6 7 8 9 0

SCREEN CODES : 6 Mesh (R) 8 Mesh (U) 16 Mesh (PR) 24 Mesh (LY)
 50 Mesh (GD) No Screen (D)

BAG MARK IDENTIFICATION : For purposes of product identification.

First Code letters refer to top sifter screen.

Second Code letters refer to bottom sifter screen.

Number following code letters indicates cubic foot density of product.
Always mark bag with appropriate code Identification.

The following products have been established for Code Identification
Industrial Perlite. Other screen and density combinations may be requested.
Refer any special requests to Production Department.

<u>PRODUCT IDENTIFICATION</u>	<u>SCREEN SET-UP</u> 8	<u>SCREENED FROM EXPANDED</u>
R-D-8	(-6 +0)	UP-22 - Mpls. - Denver
R-D-10	(-6 +0)	JM-430 - Omaha
R-PR-8	(-6 +16)	
R-PR-10	(-6 +16)	
R-LY-8	(-6 +24)	
R-LY-10	(-6 +24)	
R-GD-8	(-6 +50)	
R-GD-10	(-6 +50)	
U-D-6	(-8 +0)	JM-310 - Omaha
U-D-8	(-8 +0)	UP-13 - Milw.
U-D-10	(-8 +0)	UP-19 - Mpls.
U-LY-6	(-8 +24)	
U-LY-8	(-8 +24)	
U-LY-10	(-8 +24)	
U-GD-6	(-8 +50)	
U-GD-8	(-8 +50)	
U-GD-10	(-8 +50)	
U-GD-10 Dry Wall Supply	(-8 +50)	UP-22
PR-D-6	(-16 +0)	JM-310 - Omaha
PR-D-8	(-16 +0)	UP-13 - Milw.
PR-D-10	(-16 +0)	UP-19 - Mpls.
PR-GD-6	(-16 +50)	
PR-GD-8	(-16 +50)	
PR-GD-10	(-16 +50)	

Procedure B-22

Revised May 13, 1966

Outdates September 22, 1964

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PRODUCT IDENTIFICATION

SCREEN SET-UP

SCREENED FROM EXPANDED

LY-D-8	(-24 +C)	Expanded UP-9, CM-40 or JM PA-150
LY-D-10	(-24 +0)	"
LY-D-12	(-24 +0)	"
LY-GD-8	(-24 +50)	"
LY-GD-10	(-24 +50)	"
LY-GD-12	(-24 +50)	"
LY-GD-14	(-24 +50)	"
GD-D-12/14	(-50 +0)	Any Expanded Perlite to Meet Specs.
GD-D-10	(-50 +0)	
AD-GD-9	(-30 +50)	Expanded UP-24 (Dry Wall Fines)
GD-D-10-12	(-50 +0)	Expanded UP-24 (Skil Kast Fines)

SPECIAL NOTE: FOR PERLTEX TEXTURE GRANULES REFER TO
MANUFACTURING PROCEDURE AND CODES.

PRODUCTION DEPARTMENT

D. P. Wesenberg

DPW/mr

SECTION "C" - OTHER PRODUCTS
as of 11-9-66

- C-1 *PEARL TILE CEMENT GROUT*
- C-2 Zonolite Acoustical Plastic - Plain
- C-3 Zonolite Acoustical Plastic - White
- C-4 Spra-Wyt Acoustical Finish
- C-5 Mono-Kote (Mpls. - Omaha - Denver)
- C-5 Mono-Kote (Milwaukee)
- C-6 Spra-Insulation (Mpls. - Omaha - Denver)
- C-6 Spra-Insulation (Milwaukee)
- C-7 Z-Tex (Not available at this time)
- C-8 *ZONOLITE FEATHER CRETE*
- C-9 Perl-Coustic (Omaha Only)
- C-10 Perl-Crete Admix and Zonolite Concrete Admix
- C-11 Patching Plaster (Omaha Only)
- C-12 Patching Plaster (Milwaukee Only)
- C-13 Perl-Tile Grout
- C-14 Lumnite Grout
- C-15 Masonry Fill
- C-16 CTC # 3 Coated
- C-17 BTU #4 Coated (See A-10 for not coated)
- C-18 Perltex (LY-GD-14)
- C-19 Cornell Mix
- C-20 Perltex Spray Surfacer - Set-Up Formula (Omaha)
- C-21 Perltex Spray Surfacer - Batch Formula (Omaha)
- C-22 TerraGro (Minneapolis & Milwaukee)
- C-22A TerraGro - Benton Kirby (Milwaukee)
- C-23 Rose Mulch

(Continued)

Continued

SECTION "C" - OTHER PRODUCTS

- C-24 Perltext Prep Coat #2 Concentrate (Omaha)
- C-24B Perltext Prep Coat # 3 Concentrate (Omaha Only)
- C-24C Perltext Prep Coat # 3 Batch Mix (Puerto Rico) and (Omaha)
- C-25 Hi-Sorb - Oyster White
- C-26 Hi-Sorb - rx White
- C-27 Dry Cast Tile
- C-28 Wet Cast Tile
- C-29 Ready-Crete Patching Plaster (Milwaukee)
- C-30 PlasterTex Interior Finish (See C-20 and C-21)
- C-31
- C-32
- C-33 PlasterTex Exterior Finish - (See C-24B and C-24C)
- C-34 Coated Plaster Aggregate (Minneapolis Only)
- C-35 Gun Coat Spray Surfacer - Set-Up Formula (Omaha)
- C-35A Gun Coat Spray Surfacer - Batch Formula (Omaha)
- C-35B Spray Surfacer V
- C-36 G-s Z-Crete
- C-37
- C-38 Perltext Concrete Leveler (Omaha)
- C-39 Perlite Masonry Fill
- C-40 Span Deck Aggregate (Minneapolis Only)

New

Procedure C-1
December 14, 1966

CONFIDENTIAL

NON RESPONSIVE



Procedure C-2

Revised May 7, 1963

Outdates September 1, 1960

C O N F I D E N T I A L

NON RESPONSIVE



Procedure C-3

Revised May 7, 1963

Outdates July 3, 1962

C O N F I D E N T I A L

NON RESPONSIVE



Procedure C-4

Revised April 27, 1965

Outdates July 3, 1962

C O N F I D E N T I A L

NON RESPONSIVE



Procedure 0-5
Revised January 13, 1964
Outdates January 31, 1962

C O N F I D E N T I A L

NON RESPONSIVE



*D.E. Nyvold - Minneapolis
Plant*

TO: Plant Superintendents
H. A. Brown - Cambridge
J. K. Chapin - Travelers Rest
W. R. Payment - Travelers Rest
J. M. Timmons - Travelers Rest
W. R. Wright - Cambridge

DATE: June 19, 1969

FROM: Thomas F. Egan

Gentlemen:

As you should know the formulation has been altered for Mono-Kote. The change was to reduce the asbestos per batch from 100 lbs. \pm 5 to 93 lbs. \pm 5.

In order to avoid confusion at the mixer, you can alter the batch quantity to allow for even units of product.

You should have received your new U.L. procedure which was revised 6/6/69. It states in the last sentence, "The size of the batch may vary, however, each batch is to have the ingredients in the above proportions."

New Suggested batch size:

Vermiculite	9 bags
Gypsum	467 lbs.
Asbestos	100 lbs.

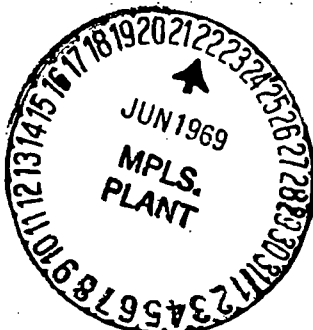
This should eliminate the problems of breaking bag units to satisfy the inspectors when using the listed batch size.

If there are any questions, please contact me at once.

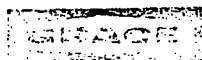
Sincerely,

Tom jac
Thomas F. Egan

TFE/jac



HOME OFFICE



Procedure C-6

April 22, 1963

Outdates January 6, 1963

C O N F I D E N T I A L

NON RESPONSIVE



PRODUCTION DEPARTMENT

Procedure C-7
September 1, 1960

CONFIDENTIAL

NON RESPONSIVE



Procedure C-8
New December 14, 1966

C O N F I D E N T I A L

NON RESPONSIVE



Production Department
D. P. Wesenberg

DPW:jt

Don Reynolds

Procedure C-10

July 16, 1964

Outdates September 1, 1960

C O N F I D E N T I A L

NON RESPONSIVE



Procedure C-13

October 20, 1964

Outdates December 1, 1960

C O N F I D E N T I A L

NON RESPONSIVE



Procedure C-14

September 1, 1960

Outdates January 10, 1958

C O N F I D E N T I A L

NON RESPONSIVE



Procedure C-15
Revised February 2, 1966
Outdates August 20, 1964

~~CONFIDENTIAL~~

NON RESPONSIVE



Procedure C-16

Revised December 20, 1962

Outdates September 1, 1960

C O N F I D E N T I A L

NON RESPONSIVE



Procedure C-17
September 1, 1960

C O N F I D E N T I A L

NON RESPONSIVE



Procedure C-18
Revised July 22, 1966
Outdates April 15, 1966

NON RESPONSIVE



Procedure C-22
September 1, 1960
Outdates February 18, 1957

C O N F I D E N T I A L

NON RESPONSIVE



Procedure C-23
January 26, 1961

C O N F I D E N T I A L

NON RESPONSIVE



Procedure C-25
Revised July 13, 1966
Outdates July 3, 1966

C O N F I D E N T I A L

NON RESPONSIVE



Procedure C-26
Revised July 13, 1966
Outdates July 3, 1962

C O N F I D E N T I A L

NON RESPONSIVE



TEMPORARY Procedure ~~PC~~ C-34

November 27, 1962

C O N F I D E N T I A L

NON RESPONSIVE

Procedure C-36

April 23, 1963

C O N F I D E N T I A L

NON RESPONSIVE



Procedure C-39
Revised April 28, 1966
Outdates February 2, 1966

C O N F I D E N T I A L

NON RESPONSIVE



Procedure 0-60
Revised November 4, 1964
Outdates November 3, 1964

C O N F I D E N T I A L

NON RESPONSIVE



SECTION "D" - MISC. PROCEDURES

- D-1 Ore Inventory Weights
- D-2 Screen Assemblies
- D-3 Code Date Procedure
- D-4 Plant Files
- D-5 VAC Standards

Procedure D-1
September 1, 1960
Outdates May 17, 1956

ORE INVENTORY WEIGHTS PER CUBIC FOOT

WEIGHT PER CUBIC FOOT OF ORE

<u>Storage</u>	<u>Vertical</u>	<u>Horizontal</u>
#0 SF	65	62
#1 HF	66	64
#2 Ref	66	64
CA	63	60
#3 PA	66	64
#4 PA	61	59

When measuring the number of cubic feet of ore on hand, will you continue to be conservative in your estimates. Let's be sure there are as many cubic feet on hand as your figures would indicate. If we are ever called upon to make an inventory adjustment, we would want it on the credit side.

PRODUCTION DEPARTMENT

Max F. Corso

MFC:sc

Procedure D-2

Revised May 6, 1964

Outdates December 1, 1960

SCREEN ASSEMBLIES

Minneapolis

GRAVITY SCREEN #1 FURNACE

Screen No.	Furnace No.	Ore	Results
A5	1	#0	Litter and Extender *
A3	1	#0	Bar-B-Sorb and Extender *
A7	1	#1	H. F. and SAP
A3	1	#3	To remove clinkers and large sizes from P.A. and C.A.

GRAVITY SCREEN #2 FURNACE

Screen No.	Furnace No.	Ore	Results
A6	2	#0	Litter and Extender *
A3	2	#0	Bar-B-Sorb and Extender *
A7	2	#1	H. F. and SAP
A3	2	#2	To remove large sizes from Refr.
A3	2	#3	To remove large sizes from P.A. and C.A.
A8	2	#4	To remove clinkers and large sizes from P.F.A.

NOTE: Deviation from this procedure may be necessary for three reasons:

1. Variation of ore sizes and quality as shipped from the mine.
2. Variation of screen construction.
3. Variation in furnace operation.

* Use as extender for H. F. only when removing -12 mesh.

In cases of off standard ore from the mine, it may be necessary to use a larger or smaller screen than indicated to keep products within standards established.

Frequent "Product Screen Analysis Reports" (QC-2) will indicate when any product is off plant standards.

PRODUCTION DEPARTMENT

Max F. Corso

Procedure D-3

April 30, 1963

Outdates September 1, 1960

C O N F I D E N T I A L

CODE DATE PROCEDURE

All products so specified in procedure shall be code dated. The code date shall be marked clearly and as inconspicuous as possible, preferably on the back side of each bag near the bottom.

EXAMPLES

<u>Batch No.</u>	<u>Plant</u>	<u>Month</u>	<u>Year</u>	<u>Date</u>
1	A	9	3	1

<u>Batch No.</u>	<u>Plant</u>	<u>Month</u>	<u>Year</u>	<u>Date</u>
1	A	12	3	15

IDENTIFYING LETTERS FOR PLANTS

A - Omaha	G	R	U
B - Minneapolis	H	P - Paterson	V
C - Milwaukee	J - Jacksonville	Q	W
D - Denver	K	R	X
E - Dallas	L - Los Angeles <i>Symboloid Co</i>	S - Seattle	Y
F -	M	T	Z

Identifying letters for plants will be assigned by the Minneapolis Office.

PRODUCTION DEPARTMENT

Max F. Corso

Procedure D-4
September 1, 1960
Outdates September 1, 1952

PLANT FILES

<u>Number</u>	<u>Form</u>	<u>To Be Retained</u>
OD-3	Bill of Lading	6 Months
PL-2	Memorandum of Credit	6 Months
PL-11	Carloading Charts	6 Months
PL-1	Daily Shipping Reports	1 Year
PL-9	Shift Reports	1 Year (Western Weighing & Inspection Bureau Requirement)
PL-10 and PL-18	Weekly Production Reports	1 Year
	Monthly Reports	2 Years
	Car Record Sheets	6 Months
	Notices of Shipment (to us)	6 Months
	Payroll Change Notices	4 Years beyond date of separation
	Withholding Slips	1 Year beyond date of separation
	Payroll Information	1 Year
	Purchase Requisition	Until Purchase Order is received and checked
PUR-1	Purchase Order (Plant Copy)	6 Months (Keep copies needed for future reference, such as orders for equipment, in permanent file.)
	Bills of Lading (Incoming)	6 Months
	Material Receipts	6 Months
	Petty Cash Recaps	1 Year
	General Correspondence	1 Year (Longer if deemed necessary)

PRODUCTION DEPARTMENT

Max F. Corso

April 30, 1963

Outdates September 1, 1960

PRODUCT VAC STANDARDS*

<u>PRODUCT</u>	<u>VAC RANGE</u>
#0 Expanded	None Established
House Fill	None Established
Econo-Fill	70-75
Terra-Lite Products	80-90
Aggregate for Acoustical	80-85
Aggregate for Spra-Insulation	80-85
Aggregate for Mono-Kote	80-85
Refrigeration Fill	75-80
Concrete Aggregate	75-80
Plaster Aggregate	75-80
#4 Expanded and Carriers	75-80
Plaster Finish Aggregate	75-80
African Aggregates	75-80
Verxite	75-80

A minimum of two samples for test purposes must be taken from each run and not less than two samples each eight (8) hour run. The first sample must be taken during the first 15 minutes of the run.

Submit quality control reports to Minneapolis showing VAC and furnace temperature including temperature adjustments to bring VAC into range.

*NOTE: VAC range may be changed for special products. All request for products outside standard must be approved by the quality control engineer.

BULK LOADING

The bulk loading unit is equipped with automatic controls to control the filling and discharge of the unit. Each cycle of the unit should discharge the same volume of material into the car or truck.

The loading unit is also equipped with a device which counts the number of cycles. The volume of material loaded into the car or truck is the number of cycles times the number of cubic feet delivered per cycle.

Calibrating the unit

With the bulk loader in operating position and required hose discharging into the car or truck, catch all material from one cycle in bags or portable hopper. Carefully measure the volume delivered in one cycle and record to the nearest 1/10 cu. ft.

Make this check not less than (2) times for each car or truck loaded and average the readings in computing volume of each shipment.

Volume for invoicing

Preset the counter to zero (0) at the start of loading and at the beginning of each subsequent shift loading into the same conveyance.

Record the bulk loader cycles into the car or truck from each shift and total the number of bulk loader cycles discharged into the total car or truck load.

Multiply the total number of cycles times the average number of cubic feet per cycle and divide by 4 to determine the volume to be billed.

$$\frac{\text{No. of cycles} \times \text{cubic feet/cycle}}{4} = \text{bags shipped}$$

Check the volume for invoicing

Compare the volume from above computations with volume of car or truck.

Also compare rail weights of cars shipped with computed weights. Correct any obvious errors before papers are released for billing.

Check loss due to breakdown in bulk loader

Breakdown in the bulk loader can be serious and expensive. Loss of approximately 6% appears to be minimum. Any loss exceeding 10% is cause for shutdown for corrective measures.

Breakdown increases with

1. air pressure increase
2. length of hose or pipe
3. number of bends in hose and pipe
4. roughness in hose and pipe
5. air leaks in hose and pipe

Compute the loss by carefully weighing the material caught in the car or truck and convert to lbs/4 cu. ft. bag. Immediately after the material is caught in the car for volume check, the operator shall draw material from the furnace bagging hopper and then catch (2) bags of material with valve open to accurately represent the furnace production - carefully measure and weigh these 4 cu. ft. bags.

Example:

Average wt/bag in car = 30 lbs.

Minus average wt/bag at furnace hopper = 28 lbs.

Increase in weight 2 lbs.

$\frac{2}{28} = 6.9\%$ loss in volume

Make this check 2 times during the loading of each car or truck.

Order terminology

When an order is received it should be written up on an SD-1-C (order form without any products printed) as "1 Carload Bulk Terra-Lite Fertilizer Conditioner #4."

When order has been shipped the plant will enter on the next line of this form the number of cu. ft. and the number of 4 cu. ft. equivalents thusly: 4804 cu. ft. = 1201 4 cu. ft. equivalents. Billing Department can then enter price per bag opposite the 4 cu. ft. equivalents.

PRODUCTION DEAPRTMENT

C. A. Pratt

CAP/mr

Procedure E-1
September 9, 1963
Outdates September 1, 1960

MINNEAPOLIS PRODUCTION EMPLOYEES

PRE-EMPLOYMENT PHYSICAL EXAMINATION

Minneapolis Plant Doctor:

Dr. Louis A. Benesh
23 S.E. Fourth Street
(Washburn-McReavy Bldg.)

Telephone: FEderal 5-8781

Office Hours:

Monday	1:00 PM to 6:00 PM
Tuesday - Friday	1:00 PM to 5:00 PM
Saturday	9:00 AM to 12:00 Noon

For any emergency outside office hours:

Telephone FEderal 5-8781 (24-hour service)

1. All new employees hired after September 9, 1963 must successfully pass a chest x-ray and a physical fitness test before being accepted as full time employees. The examination report must be completed and returned to the plant manager PRIOR to the employee entering our employment.
2. In case of question about the employee's health, the production manager will make the final decision whether or not the individual becomes permanently employed.
3. The physical report shall become a part of the employee's personnel folder kept in the Accounting Department.
4. The following schedule of fees is in effect:

Physical Examination	\$5.00
X-ray Examination	\$5.00

PRODUCTION DEPARTMENT

Max F. Corso

MFC:bs

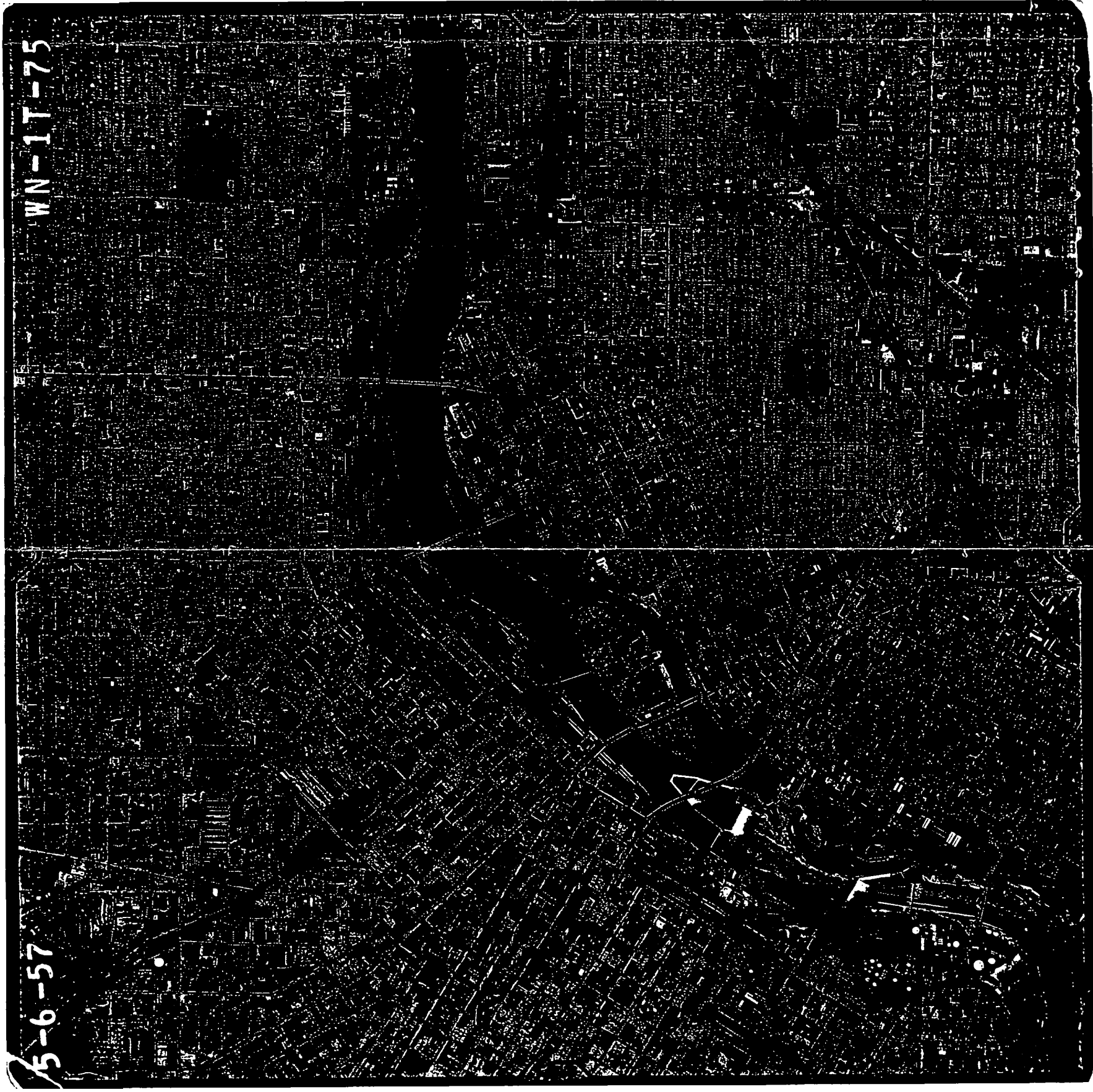


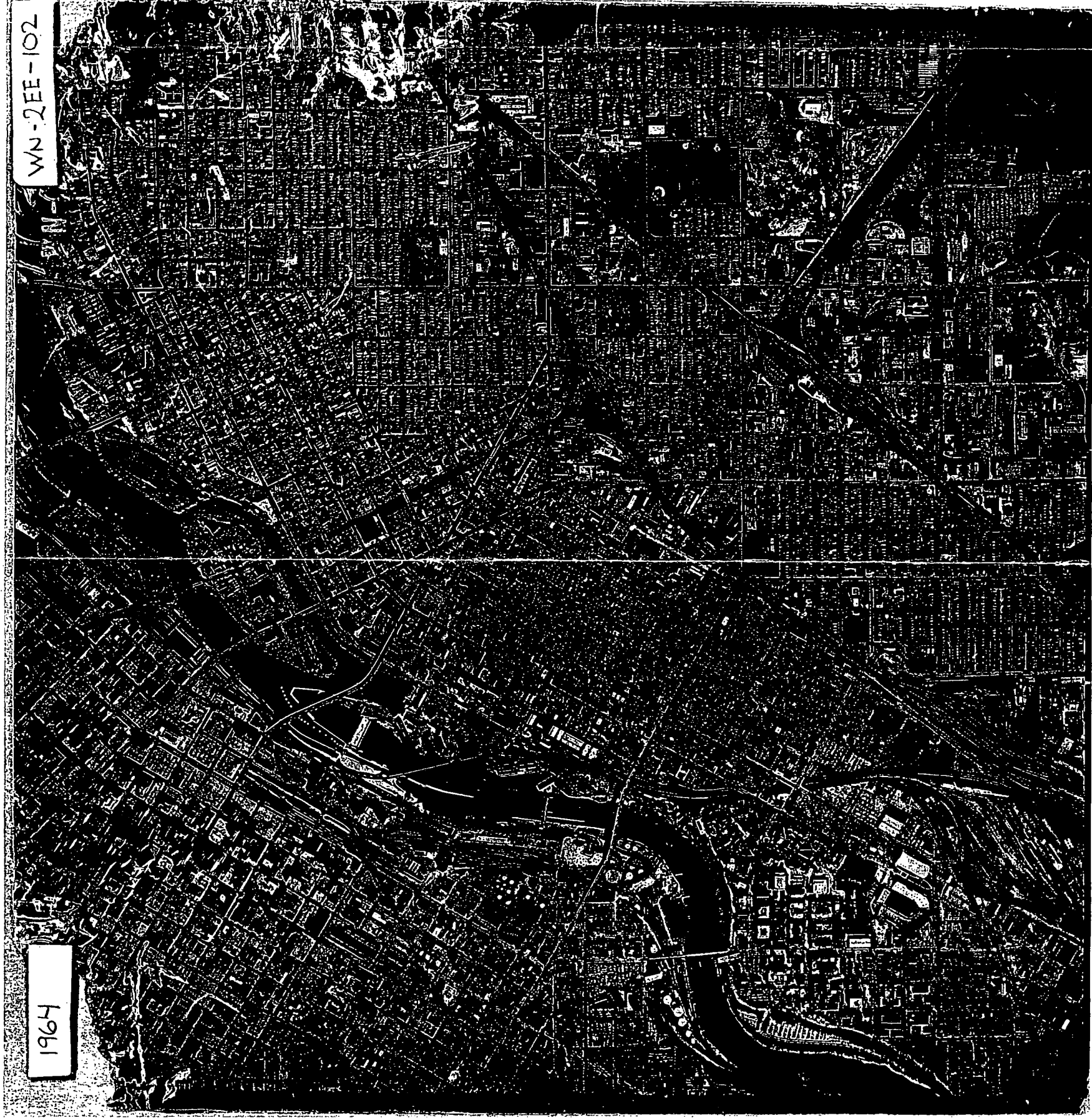
10-29-53

10-29-53

WN-1T-75

5-6-57



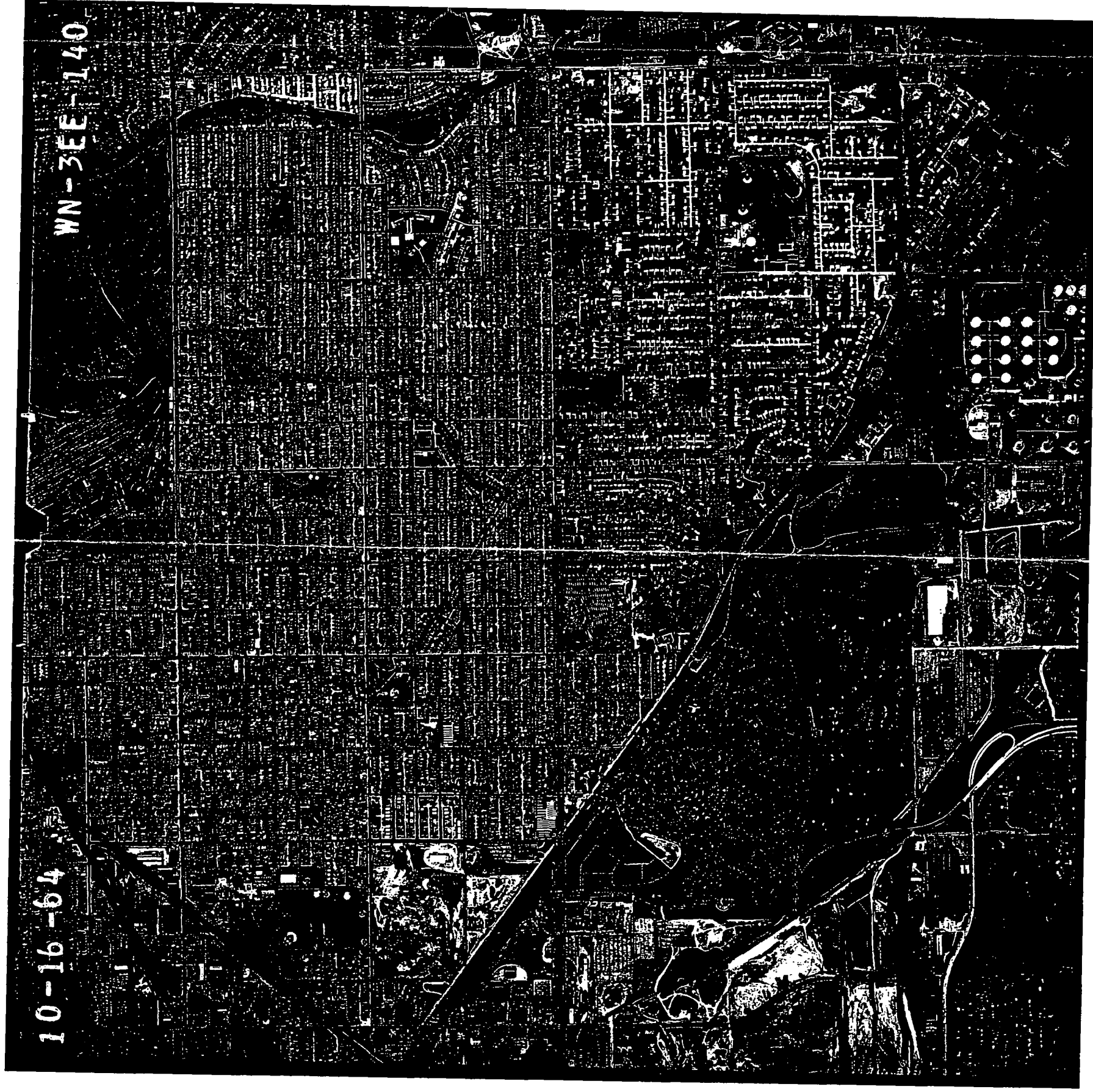


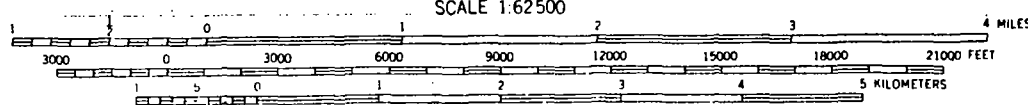
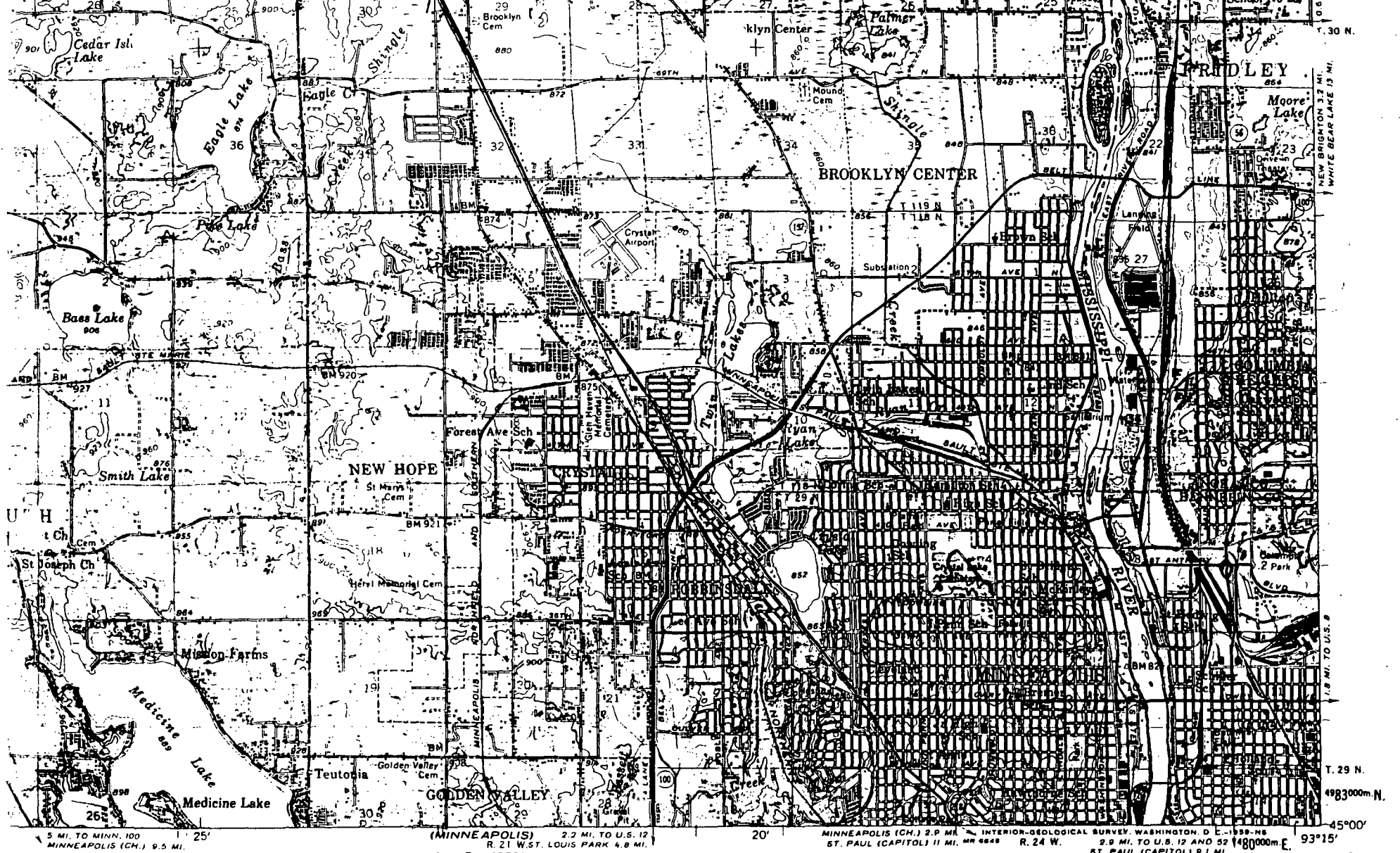
WN-2EE-102

1964

10-16-64

WN-3EE-140





TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1955

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 2, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST



ROAD CLASSIFICATION

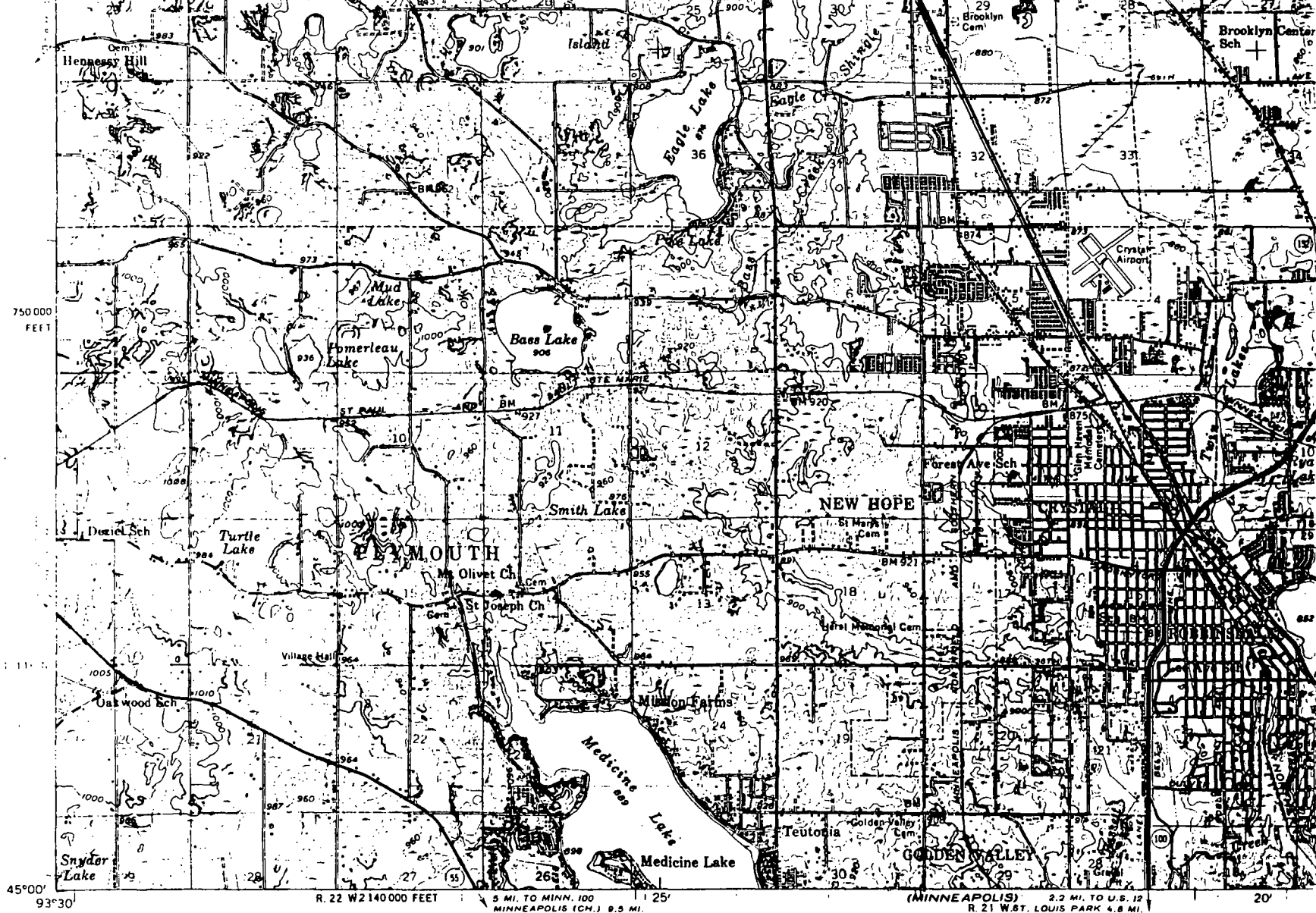
Heavy-duty ——— Light-duty ———
Medium-duty ——— Unimproved dirt - - - - -

U. S. Route (circle with line)
State Route (circle)

This area also covered by 1:24 000 scale maps of
Coon Rapids 1955, Anoka 1955, Osseo 1955, and
Minneapolis North 1952, 7.5 minute quadrangles

ANOKA, MINN.
N4500-W9315/15

1955
MINOR CORRECTIONS MAYE 1948



Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS, USCE, and Minnesota Geodetic Survey

Compiled in 1958 from 1:24,000-scale maps of

Coon Rapids, Anoka, Osseo, and Minneapolis

North 7.5 minute quadrangles, surveyed 1952-1955

Topography from aerial photographs by photogrammetric methods
and by planetair surveys. Aerial photographs taken 1947

Polyconic projection. 1927 North American datum

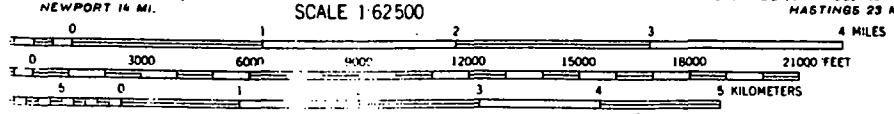
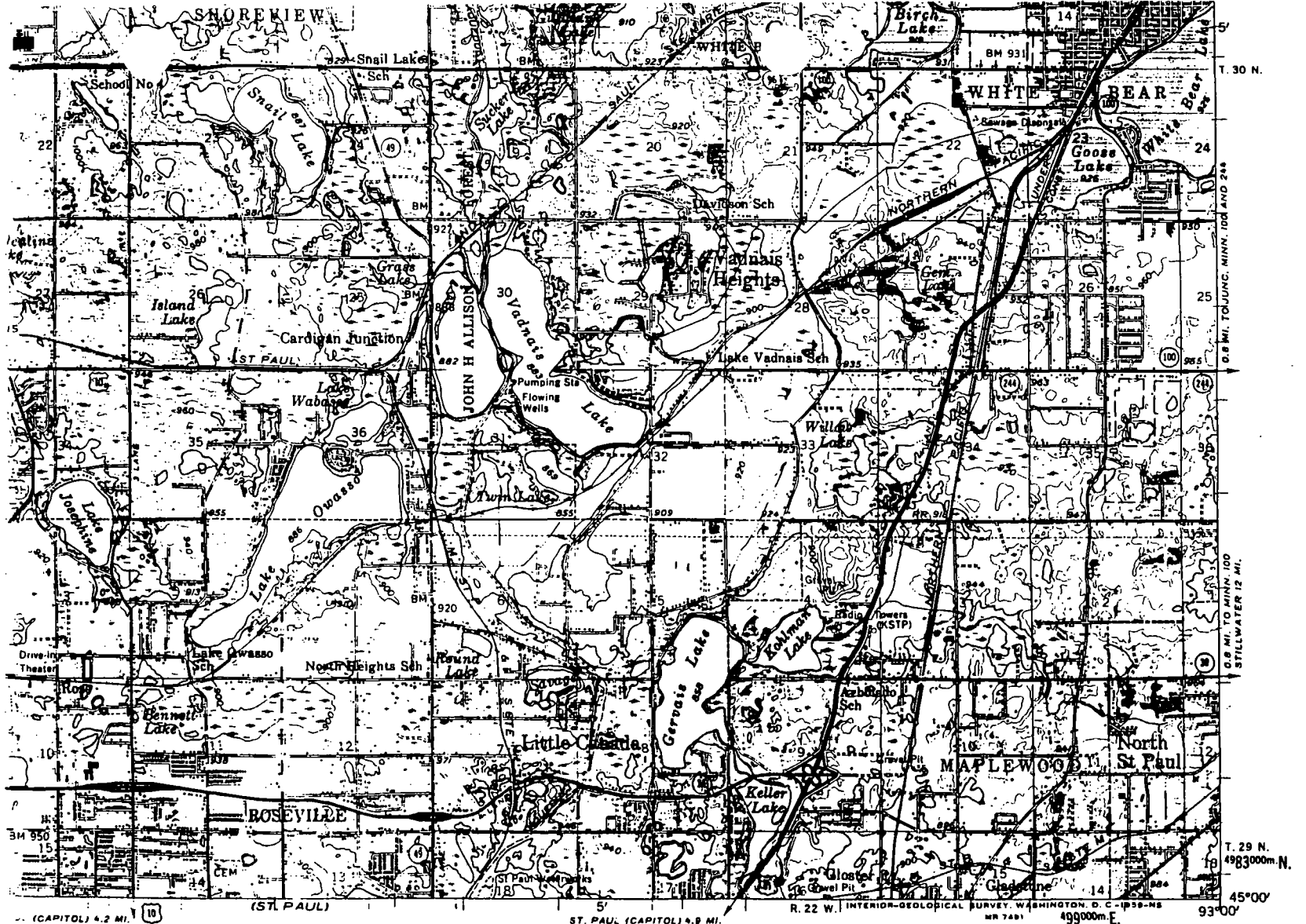
10,000-foot grid based on Minnesota coordinate system, south zone

1000-meter Universal Transverse Mercator grid ticks,

zone 15, shown in blue

Red tint indicates areas in which only
landmark buildings are shown

(LAKE MINNETONKA)



CONTOUR INTERVAL 20 FEET
 DOTTED LINE, 100-FOOT CONTOURS
 DATUM IS MEAN SEA LEVEL

LIBRARY
 GEOLOGICAL SCIENCES
 California Institute of Technology



ROAD CLASSIFICATION

Heavy-duty ——— Light-duty ———

Medium-duty ——— Unimproved dirt ———

U.S. Route ○ State Route

This area also covered by 1:24 000-scale maps of
 Centerville 1952, Circle Pines 1955, New Brighton 1952,
 and White Bear Lake West 1952 7.5 minute quadrangles

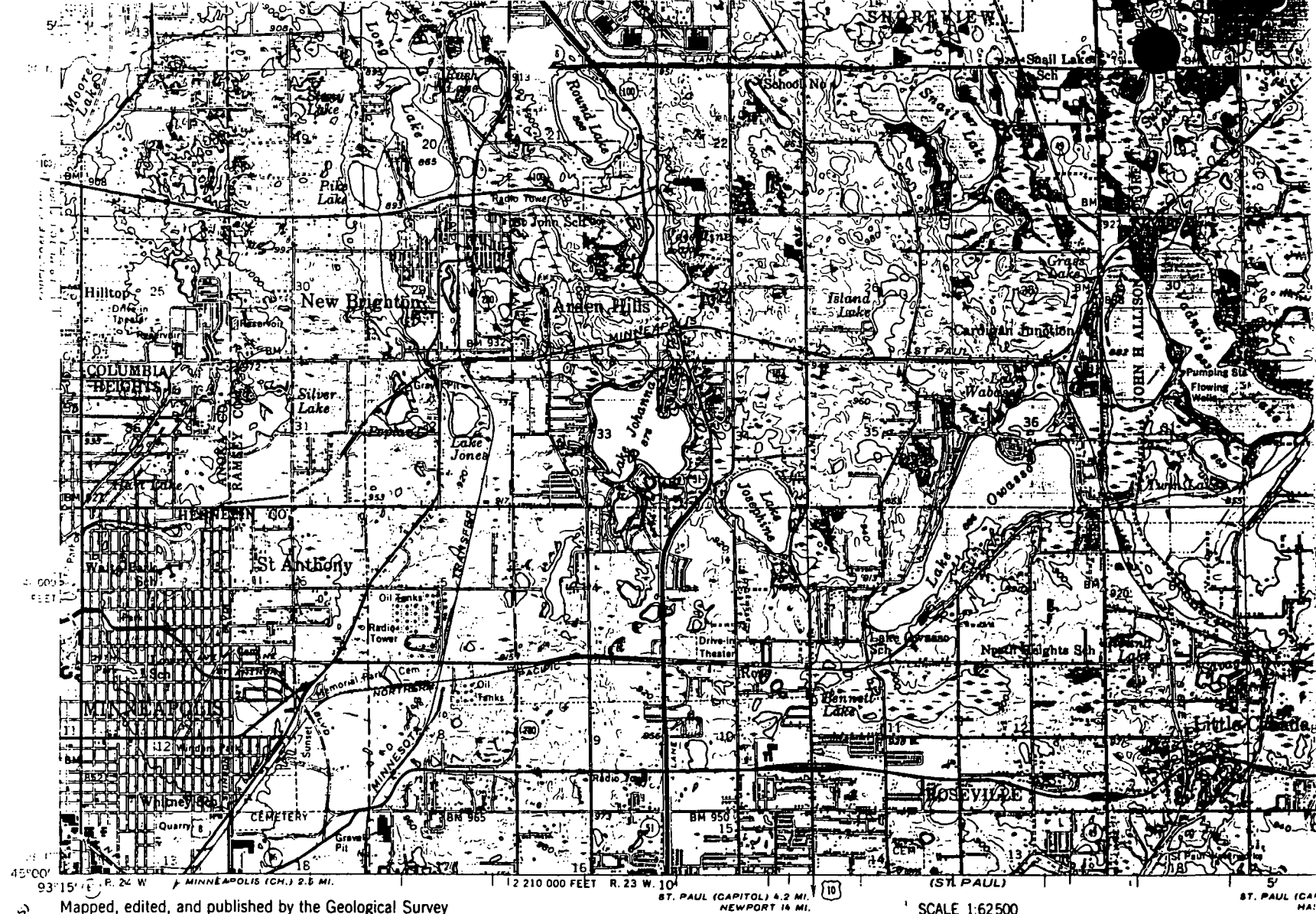
NEW BRIGHTON, MINN.
 N4500-W9300/15

1955
 MINOR CORRECTIONS MADE 1958

(HUDSON)

OLD EDITION

THIS MAP COMPLIES WITH THE MAP ACCURACY STANDARDS
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 A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST



(MINNEAPOLIS)

Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS, and USCE

Compiled in 1959 from 1:24 000-scale maps of Centerville, Circle Pines, New Brighton, and White Bear Lake West 7.5 minute quadrangles, surveyed 1952-1955

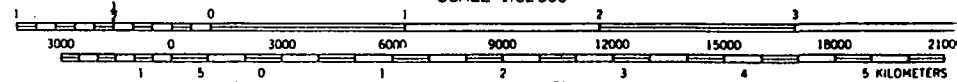
Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1947

Proctonic projection, 1927 North American datum
10,000-foot grid based on Minnesota coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 15, shown in blue

Red tint indicates areas in which only landmark buildings are shown

APPROXIMATE MEAN DECLINATION, 1955

TRUE NORTH
MAGNETIC NORTH



CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

LIBRARY
GEOLOGICAL SURVEY
California Institute of Technology

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(MINNEAPOLIS SOUTH) 7313 IV NE

SCALE 1:24 000

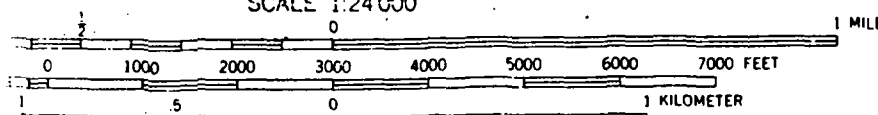
MINNEAPOLIS (CH.) 3 MI.
ST. PAUL (CAPITOL) 11 MI.

3.6 MI. TO U.S. 212

478000m E

INTERIOR-GEOLOGICAL SURVEY, WASHINGTON, D. C. - 1965
2.9 MI. TO U.S. 12 & 52
ST. PAUL (CAPITOL) 9 MI.

93°15'



CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

Heavy-duty _____ Light-duty _____
Medium-duty _____ Unimproved dirt _____

○ Interstate Route ○ U. S. Route ○ State Route



QUADRANGLE LOCATION

MINNEAPOLIS NORTH, MINN.

SE/4 ANOKA 15' QUADRANGLE
N4500 - W9315/7.5

1967

AMS 7374 III SE-SERIES V872

OLD E

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.
GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR WASHINGTON, D. C. 20242
DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ST. PAUL WIS
15311 NW



472



(HOPKINS)
7373 IV NW

Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS, and USCE

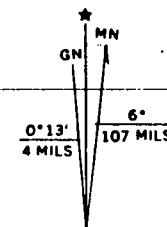
Topography by photogrammetric methods from aerial photographs taken 1947 and planetable surveys 1952. Revised 1967

Depth curves and soundings compiled from charts furnished by Minnesota Department of Conservation

Polyconic projection. 1927 North American datum
10,000-foot grid based on Minnesota coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 15, shown in blue

Red tint indicates areas in which only landmark buildings are shown

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked



UTM GRID AND 1967 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

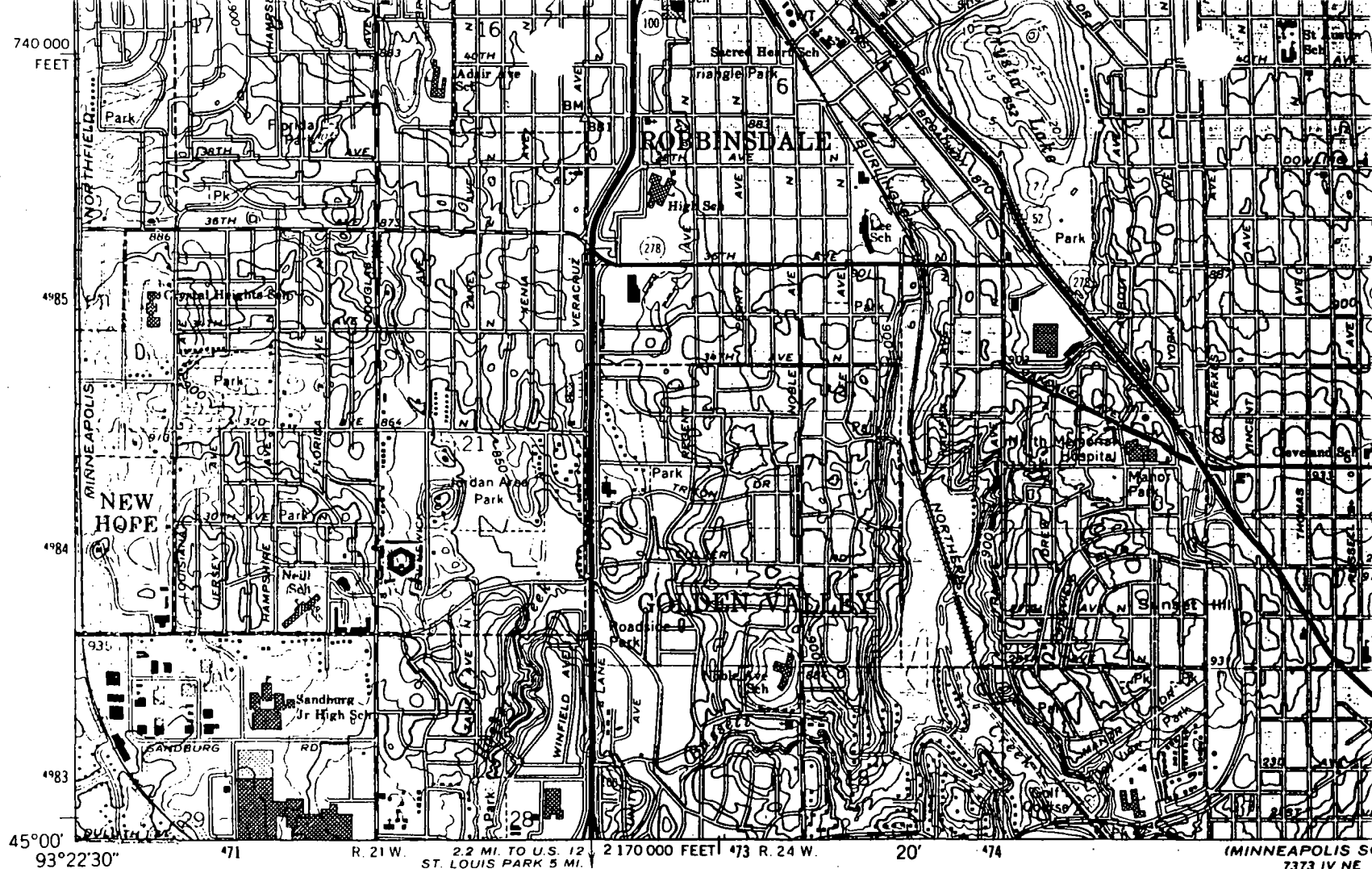


CONTOUR INTERVAL
DATUM IS MEAN

THIS MAP COMPLIES WITH NATIONAL
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER
A FOLDER DESCRIBING TOPOGRAPHIC MAPS

2 Revisions shown in purple compiled from aerial photographs taken 1972. This information not field checked

Purple tint indicates extension of urban area



Mapped, edited, and published by the Geological Survey

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Topography by photogrammetric methods from aerial photographs taken 1947. Field checked 1952. Revised from aerial photographs taken 1966. Field checked 1967

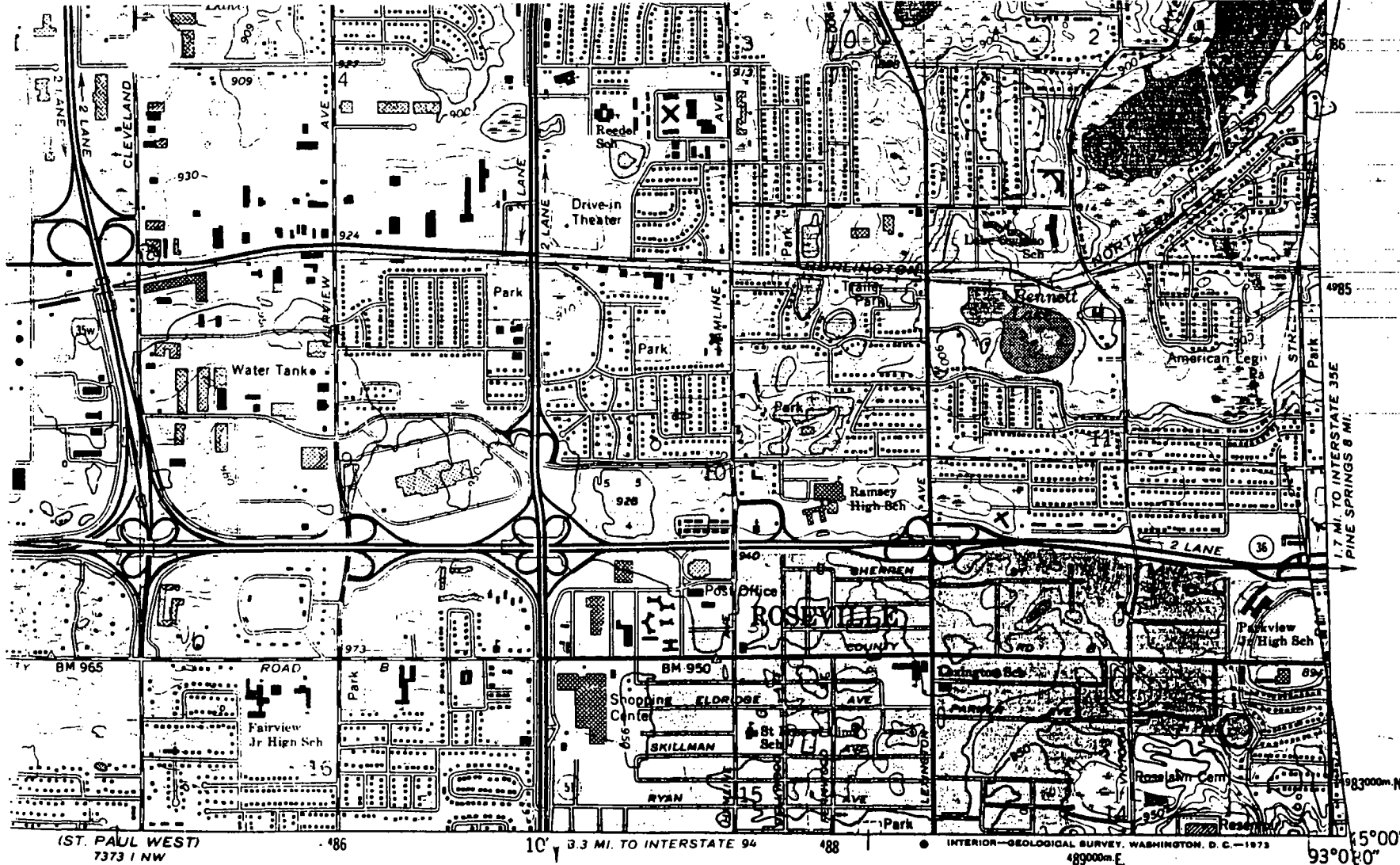
Hydrography compiled from information furnished by Minnesota Department of Conservation

Polyconic projection. 1927 North American datum
10,000-foot grid based on Minnesota coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks;
zone 15, shown in blue

Red tint indicates areas in which only landmark buildings are shown

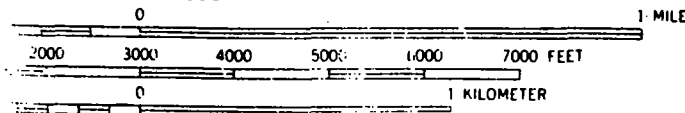
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

HOPKINS
7373 IV NW



(ST. PAUL WEST)
7373 1 NW

SCALE 1:24 000



CONTOUR INTERVAL 10 FEET
ELEVATION IS MEAN SEA LEVEL



QUADRANGLE LOCATION

ROAD CLASSIFICATION

Heavy-duty ——— Light-duty ———
Medium-duty ——— Unimproved dirt ———
○ Interstate Route ○ U. S. Route ○ State Route

NEW BRIGHTON, MINN.

SW/4 NEW BRIGHTON 15' QUADRANGLE
N4500—W9307.5/7.5

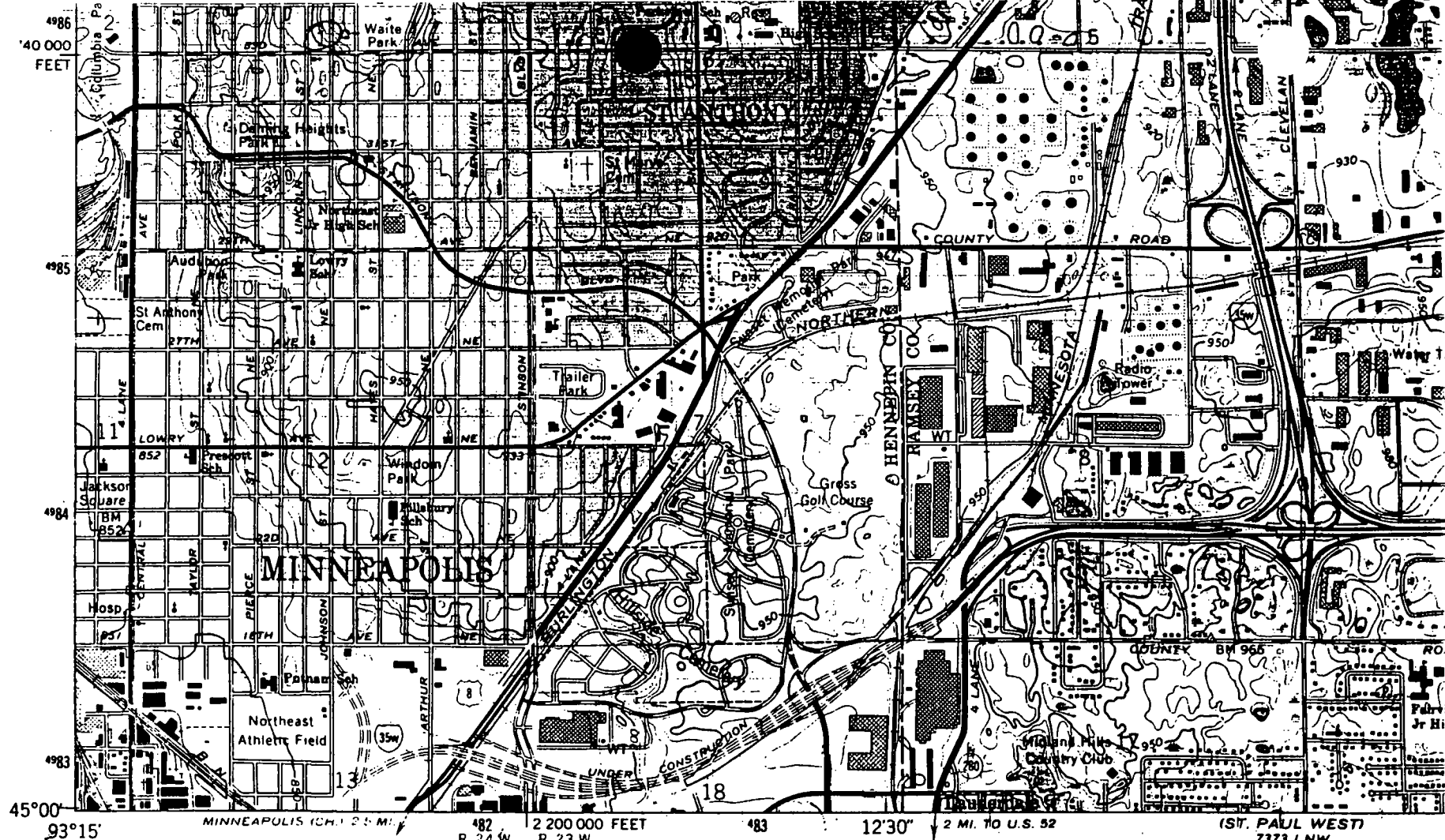
1967
PHOTOREVISED 1972
AMS 7374 II SW—SERIES V872

CONFORMS WITH NATIONAL MAP ACCURACY STANDARDS
PUBLISHED BY THE U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR WASHINGTON, D. C. 20242
FOR A COMPLETE LIST OF MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Revisions shown in purple compiled from aerial photographs
taken 1972. This information not field checked
Purple tint indicates extension of urban areas

(ST. PAUL EAST)
7373 1 NE

OLD EDITION



Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS

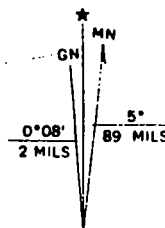
Topography by photogrammetric methods from aerial photographs taken 1947. Field checked 1952. Revised from aerial photographs taken 1966. Field checked 1967

Hydrography compiled from information furnished by Minnesota Department of Conservation

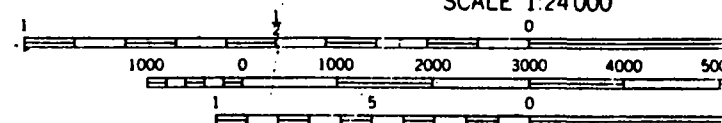
Polyconic projection. 1927 North American datum
10,000-foot grid based on Minnesota coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 15, shown in blue

Red tint indicates areas in which only landmark buildings are shown

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked



UTM GRID AND 1972 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET



CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

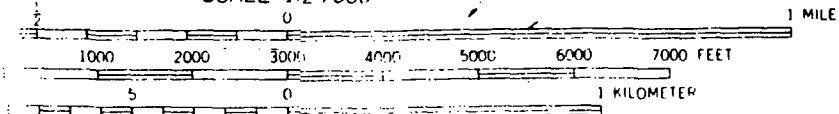
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 802
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS

(MINNEAPOLIS SOUTH)
7373 1V NE



(MINNEAPOLIS SOUTH)
7373 IV NE

SCALE 1:24 000



CONTOUR INTERVAL 10' FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929



QUADRANGLE LOCATION

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1981
2.9 MI. TO U.S. 12 & 52
ST. PAUL (CAPITOL) 9 MI

ROAD CLASSIFICATION

Heavy-duty ——— Light-duty ———
Medium-duty ——— Unimproved dirt ———
Interstate Route U.S. Route State Route

MINNEAPOLIS NORTH, MINN.

N4500 - W9315/7.5

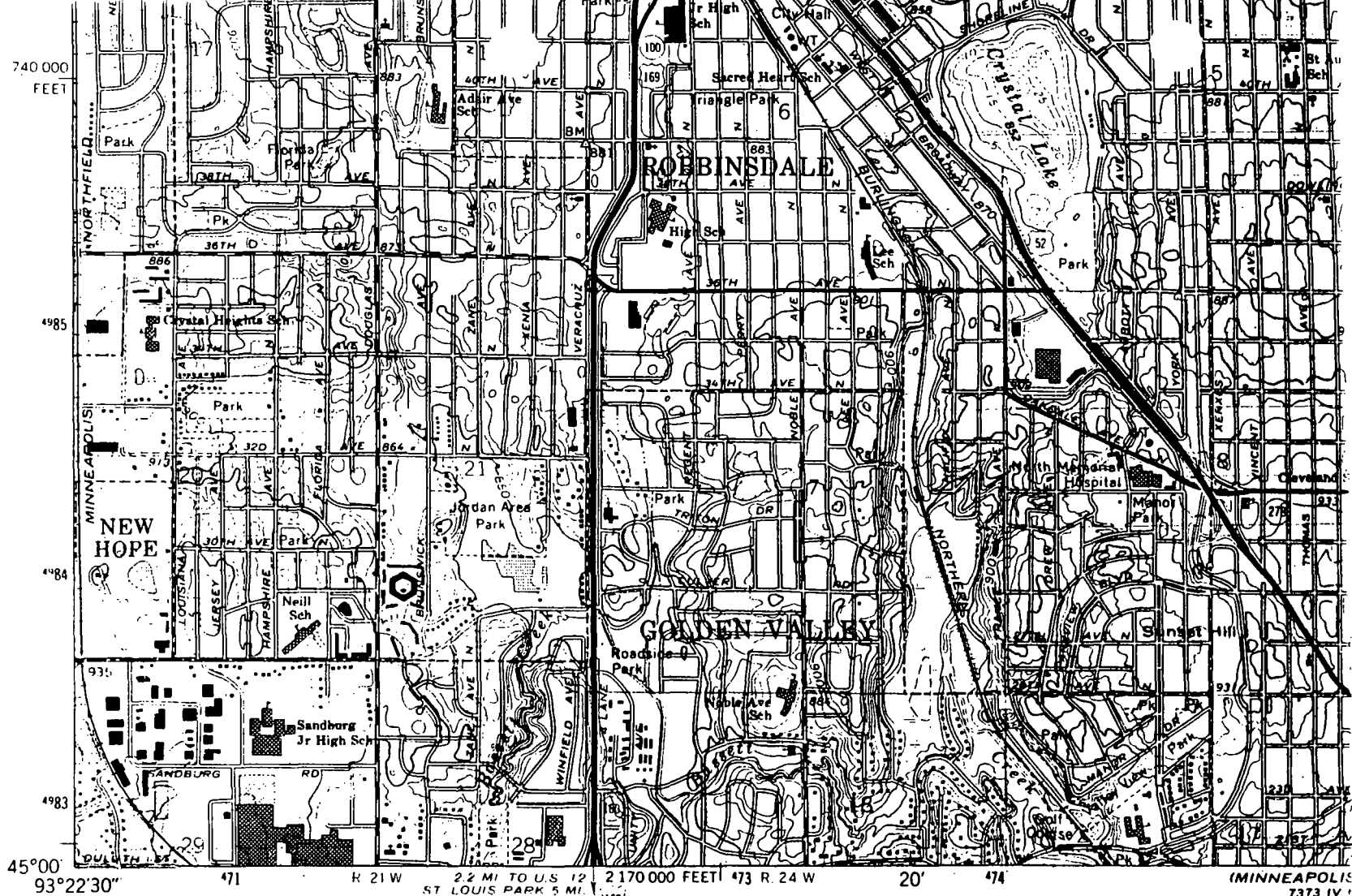
1967

PHOTOREVISED 1972 AND 1980
DMA 7374 III SE—SERIES V872

MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
MADE BY U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Revisions shown in purple compiled from aerial
photographs taken 1972 and 1977. Map edited 1980
This information not field checked

Dark gray indicates extension of urban area



(HOPKINS)
7373 IV NW

Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS, and USCE

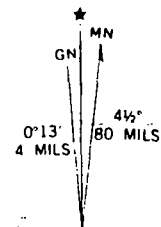
Topography by photogrammetric methods from aerial photographs taken 1947. Field checked 1952. Revised from aerial photographs taken 1966. Field checked 1967

Hydrography compiled from information furnished by Minnesota Department of Conservation

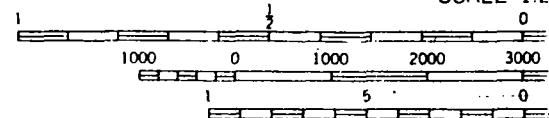
Polyconic projection. 1927 North American datum
10,000-foot grid based on Minnesota coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 15, shown in blue

To place on the predicted North American Datum 1983
move the projection lines 7 meters north and
17 meters east as shown by dashed corner ticks

Red tint indicates area in which only landmark buildings are shown

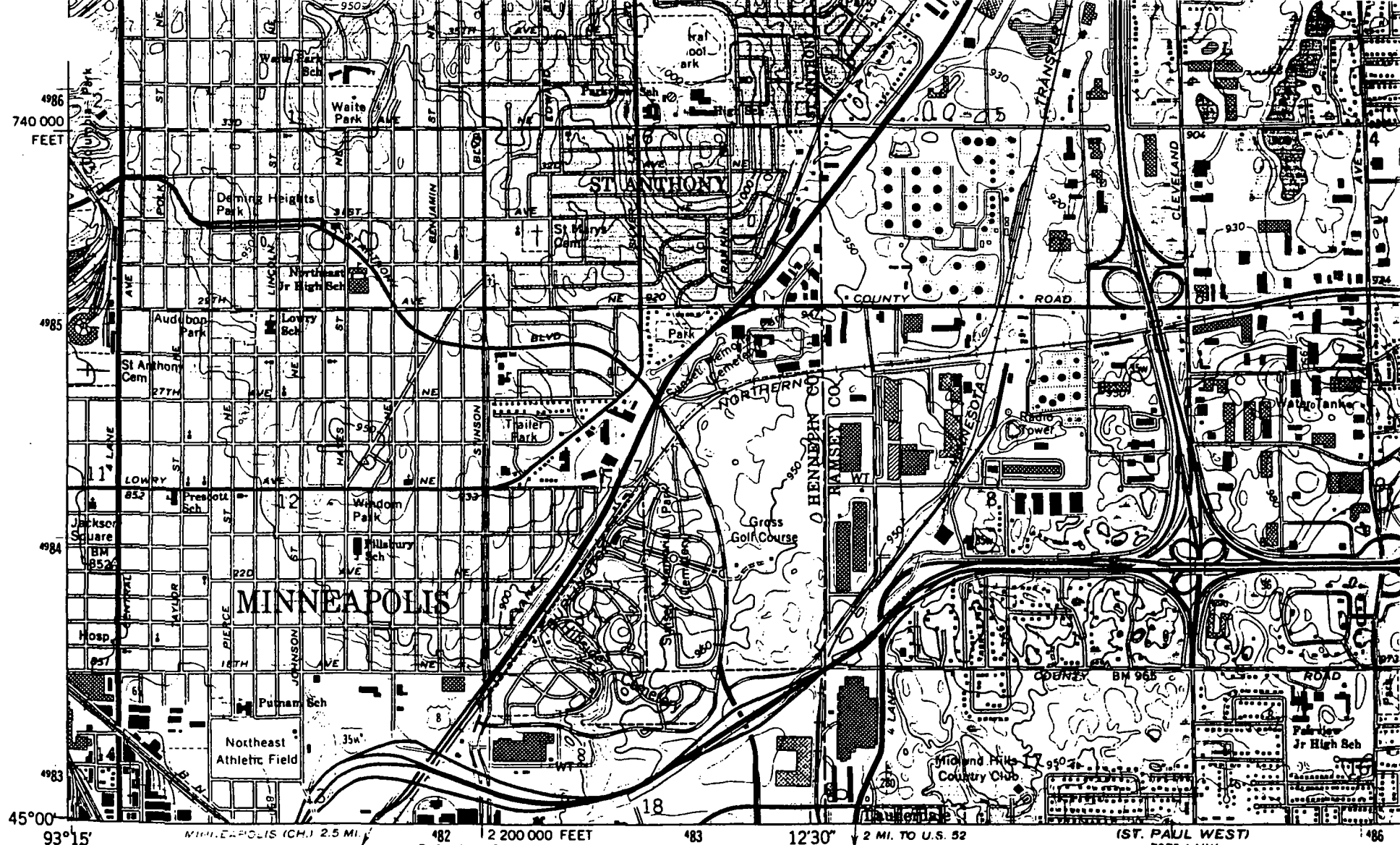


UTM GRID AND 1980 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET



CONTOUR INTERVAL
NATIONAL GEODETIC VERT

THIS MAP COMPLIES WITH NATIONAL
FOR SALE BY U. S. GEOLOGICAL SURVEY
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND



Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS

Topography by photogrammetric methods from aerial photographs taken 1947. Field checked 1952. Revised from aerial photographs taken 1966. Field checked 1967

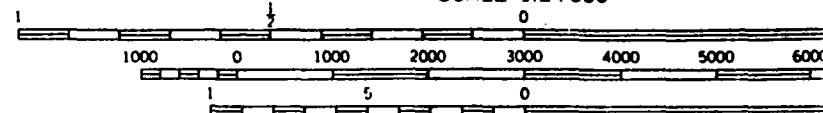
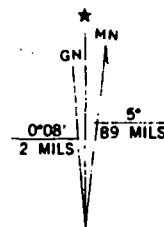
Hydrography compiled from information furnished by Minnesota Department of Conservation

Polyconic projection. 1927 North American datum
10,000-foot grid based on Minnesota coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 15, shown in blue

Red tint indicates areas in which only landmark buildings are shown

UTM GRID AND 1980 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

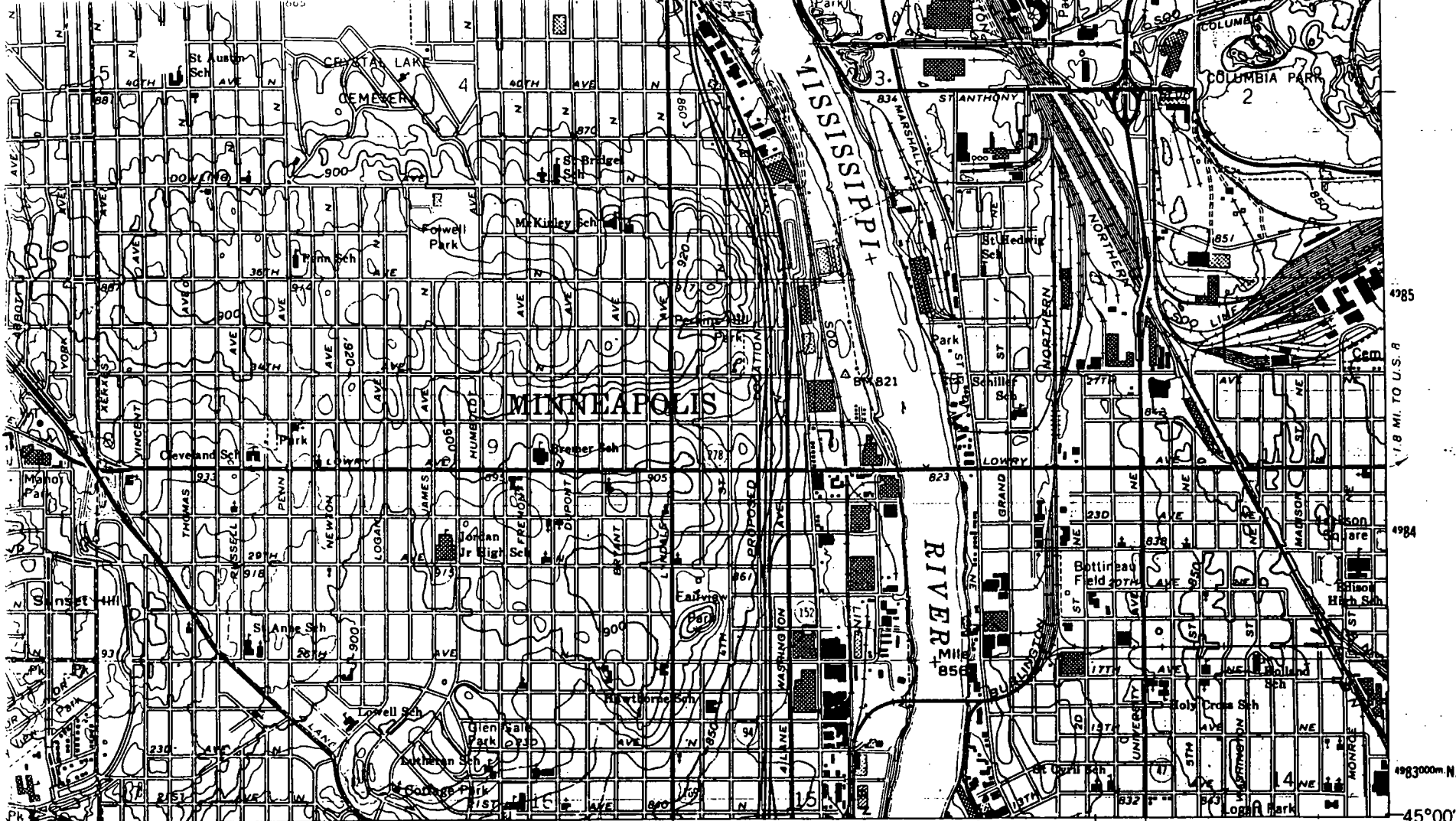
There may be private inholdings within the boundaries of the National or State



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 20192

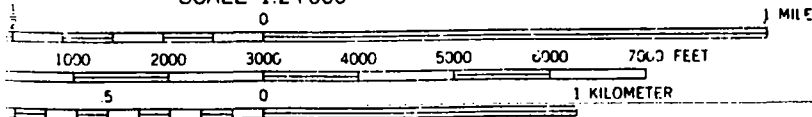
MINNEAPOLIS SOUTH
7373 IV NE



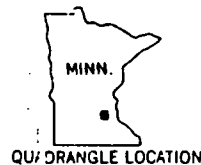
(MINNEAPOLIS SOUTH) 7373 IV NE

MINNEAPOLIS (CH.) 3 MI.
ST. PAUL (CAPITOL) 11 MI.

SCALE 1:24 000



CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL



QUADRANGLE LOCATION

ROAD CLASSIFICATION

Heavy-duty	Light-duty
Medium-duty	Unimproved dirt
○ Interstate Route	○ U.S. Route
	○ State Route

MINNEAPOLIS NORTH, MINN.

SE/4 ANOKA 15' QUADRANGLE
N4500 - W9315/7.5

1967
PHOTOREVISED 1972
AMS 7374 III SE-SERIES V872

(ST. PAUL WEST)
7373 I NW

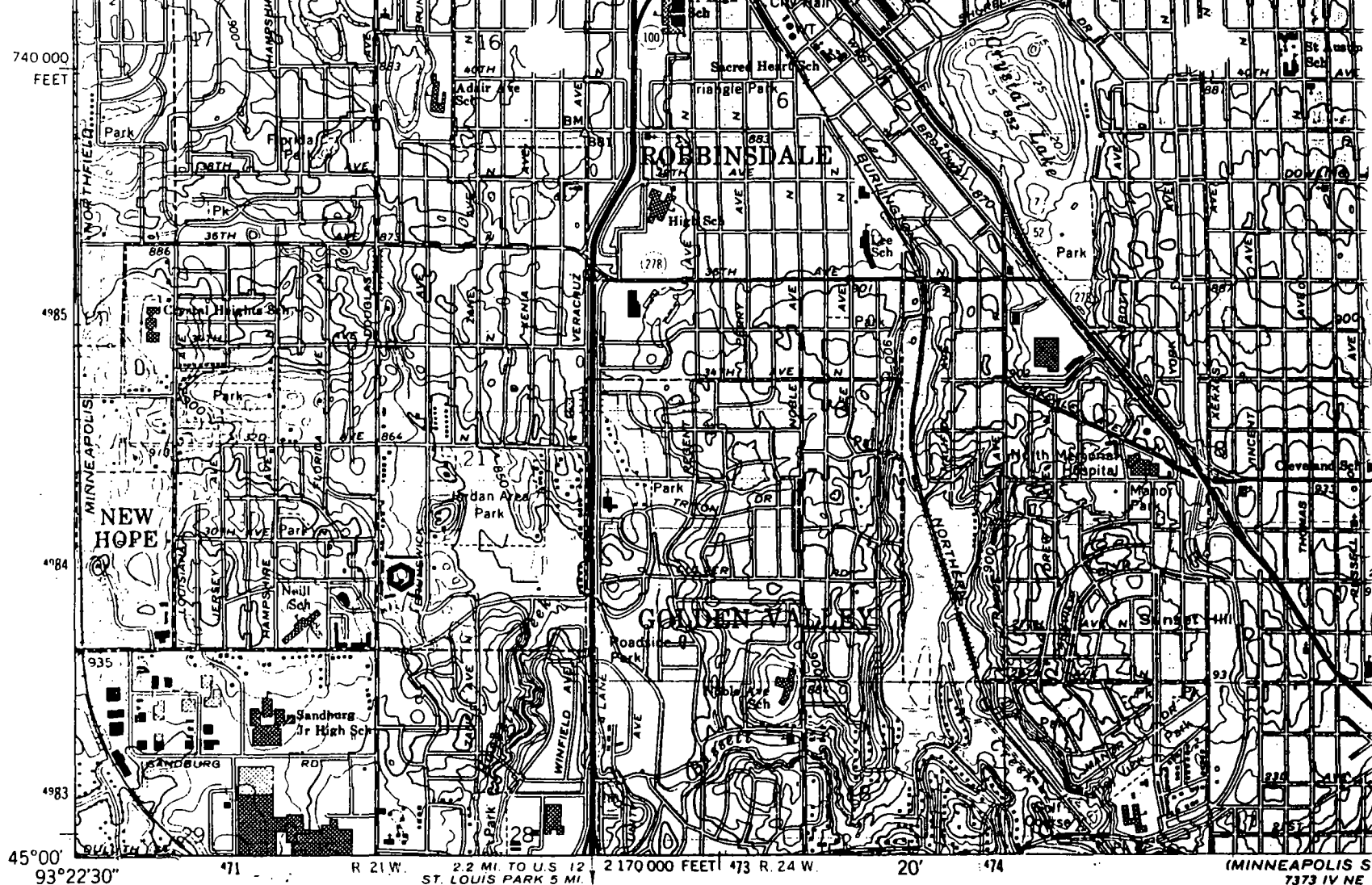
OLD EDITION

MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS

GEOLOGICAL SURVEY DENVER, COLORADO 80225, OR WASHINGTON, D. C. 20242 Revisions shown in purple compiled from aerial photographs taken 1972. This information not field checked

PRINTING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Purple tint indicates extension of urban area



Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS, and USCE

Topography by photogrammetric methods from aerial photographs taken 1947. Field checked 1952. Revised from aerial photographs taken 1966. Field checked 1967

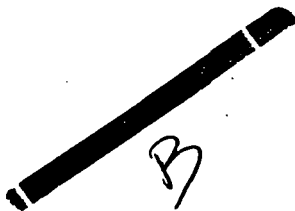
Hydrography compiled from information furnished by Minnesota Department of Conservation

Polyconic projection. 1927 North American datum
10,000-foot grid based on Minnesota coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks,
zone 15, shown in blue

Red tint indicates areas in which only landmark buildings are shown

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

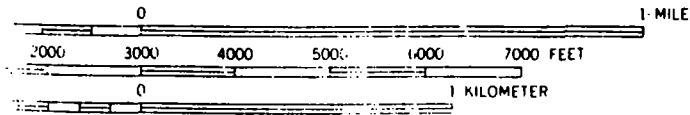
(HOPKINS)
7373 IV NW





(ST. PAUL WEST)
7373 I NW

SCALE 1:24,000



CONTOUR INTERVAL 10 FEET
ELEVATION IS MEAN SEA LEVEL



QUADRANGLE LOCATION

ROAD CLASSIFICATION

Heavy-duty _____ Light-duty _____
 Medium-duty _____ Unimproved dirt _____

○ Interstate Route □ U. S. Route ○ State Route

NEW BRIGHTON, MINN.

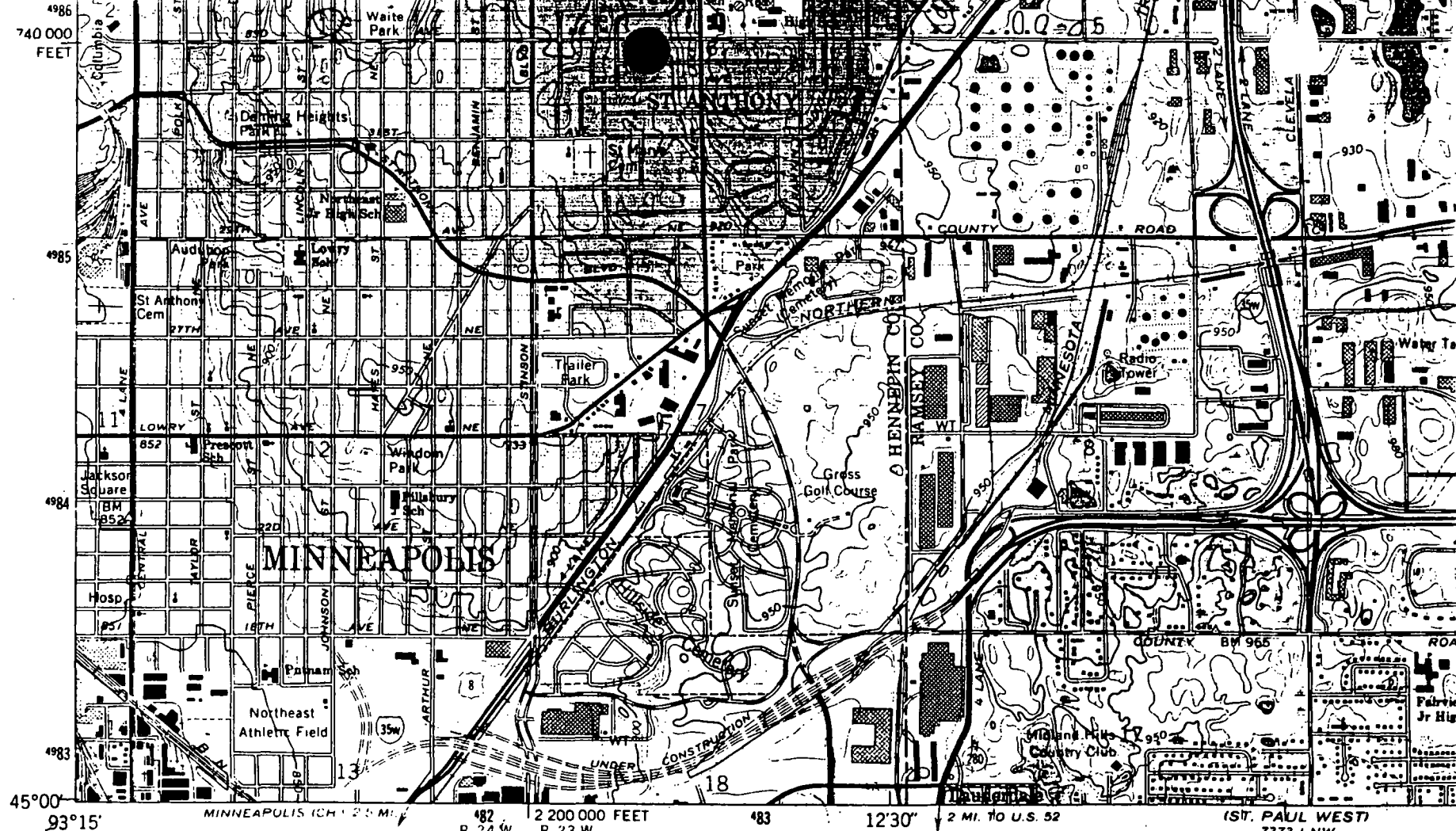
SW/4 NEW BRIGHTON 15' QUADRANGLE
N4500—W9307.5/7.5

1967
PHOTOREVISED 1972
AMS 7374 II SW—SERIES V872

CONFORMS WITH NATIONAL MAP ACCURACY STANDARDS
 SURVEY, DENVER, COLORADO 80225. OR WASHINGTON, D. C. 20242
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 Purple tint indicates extension of urban areas

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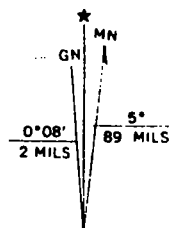
Topography by photogrammetric methods from aerial photographs taken 1947. Field checked 1952. Revised from aerial photographs taken 1966. Field checked 1967

Hydrography compiled from information furnished by Minnesota Department of Conservation

Polyconic projection. 1927 North American datum
10,000-foot grid based on Minnesota coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 15, shown in blue

Red tint indicates areas in which only landmark buildings are shown

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UTM GRID AND 1972 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

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(MINNEAPOLIS SOUTH)
7373 1V NE



Geoprobe on B-28 looking east. Sample preparation table in foreground.



Sample preparation table in exclusion zone. Red caps go on upper depth end and black caps go on bottom depth end of sample tubes. Air monitor can be seen on table.



Geoprobe on B-28. Ambient air monitors can be seen downwind and next to geoprobe.



Geoprobe on B-30. Ambient air monitor set up downwind.



Geoprobe on B-31.



Geoprobe on B-35, just east of 1720 Madison Street (3-story building).



Sample preparation table set up in exclusion zone, south of silos. Eric Poissant (URS) logging sample core.



Geoprobe on B-37 located in asphalt parking area on 1707 Jefferson Street. Modern Machine and Engineering property.



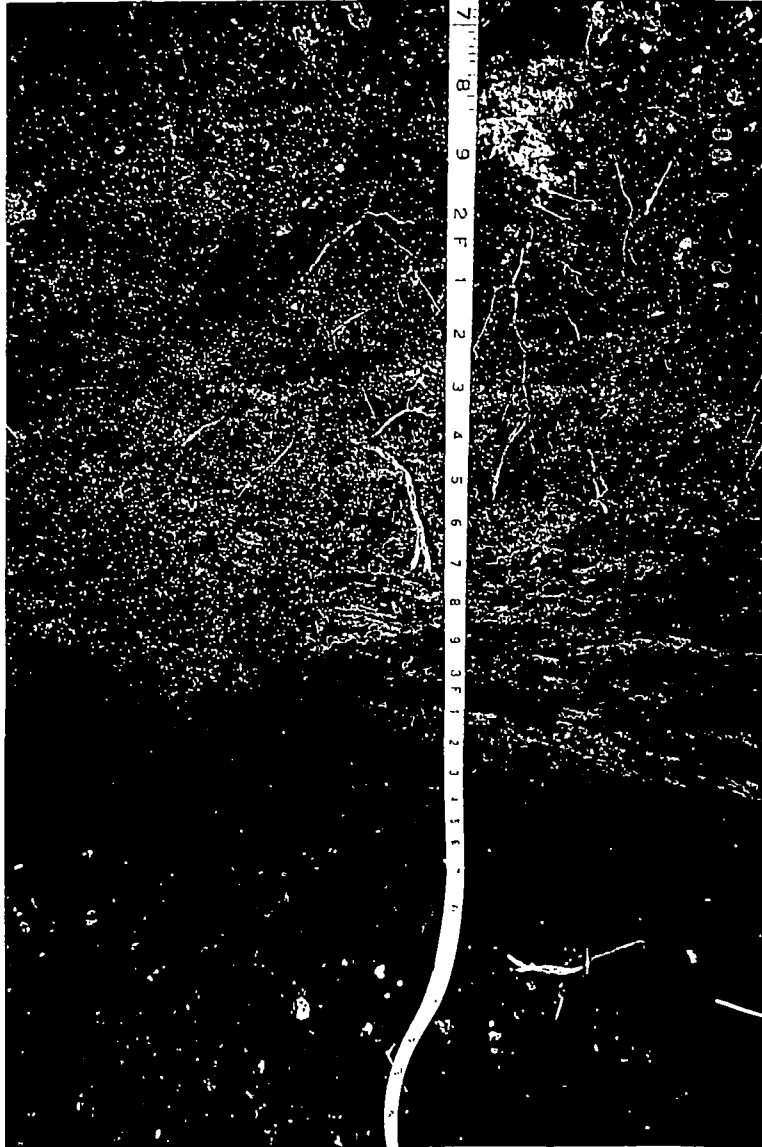
Geoprobe on B-40, adjacent to loading dock of 1720 Madison Street. Surface in this area is gravel.



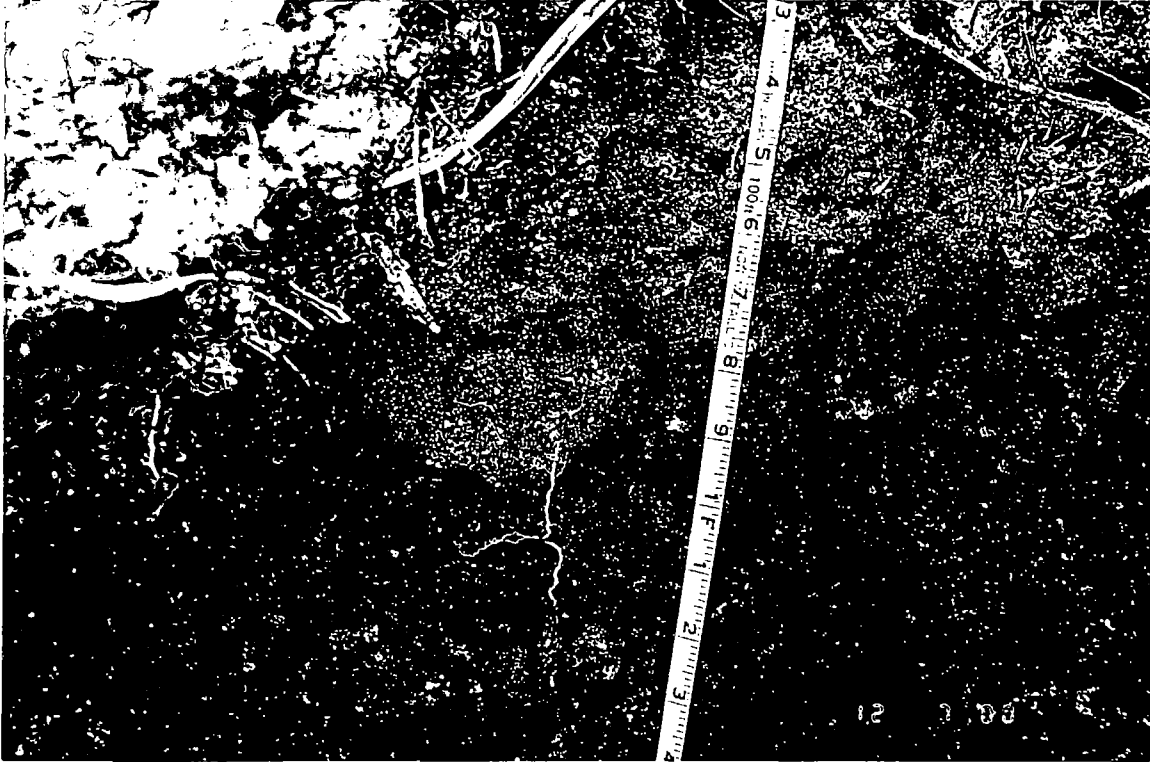
Sample preparation table in exclusion zone on south side of 1720 Madison Street. West end of building.



Upper two feet consisting of cinders and sand with small pockets of vermiculite in Test Pit #1 (TP-1).



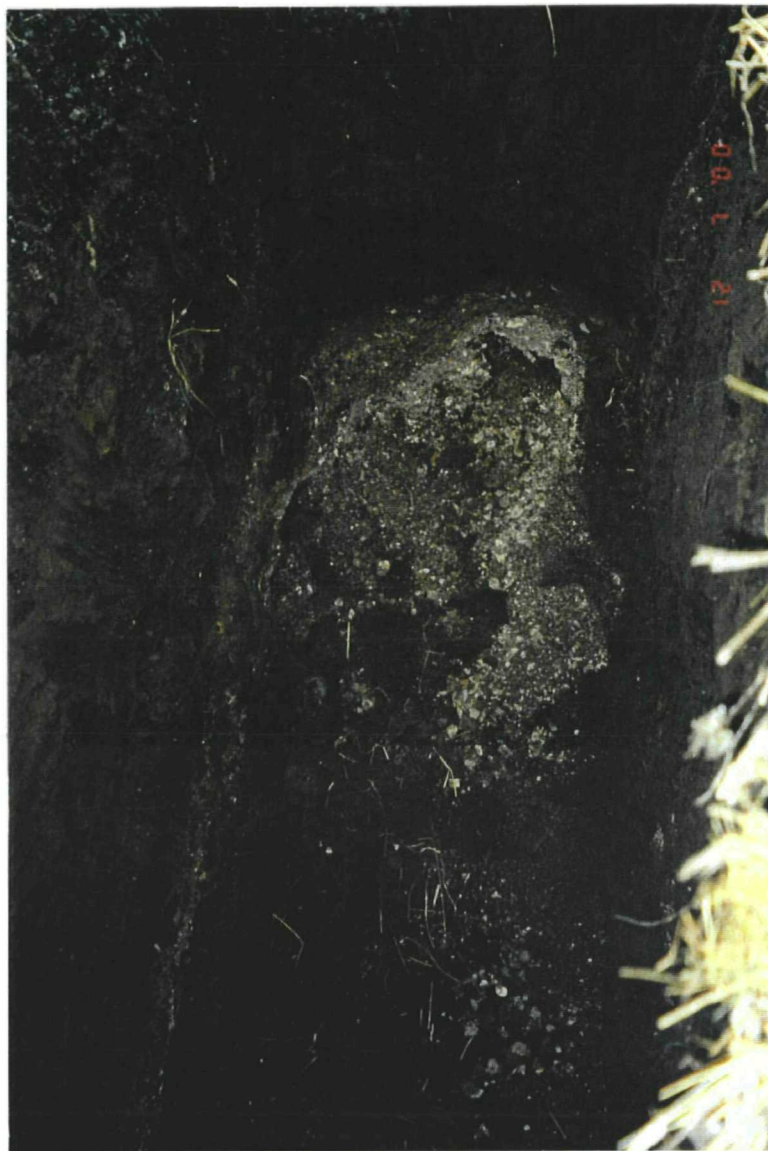
Two to four-feet below grade, fine sand and some fill in TP-1.



Showing a pocket of vermiculite identified in upper 1-foot depth of TP-1. Cinder fill material can be seen below 1-foot. Sample TP-1-1 collected from vermiculite material in upper 1-foot.



Showing fill material to 6-feet below grade in TP-1.



Fill material to 6-feet below grade in TP-1. Sample TP-1-2 was collected from fill material 5 to 6-feet below grade.



Cross-sectional view showing various fill layers on TP-1. Vermiculite material found only in upper 1-foot depth. Native soil found 6-feet below grade.



Zero to two-feet below grade, sandy fill material mixed with vermiculite in Test Pit #2 (TP-2). Sample TP-2-1 was collected from 1-foot below grade.



Cinders mixed with vermiculite from 2 to 3-feet below grade on TP-2. Sample TP-2-1 collected from this location.



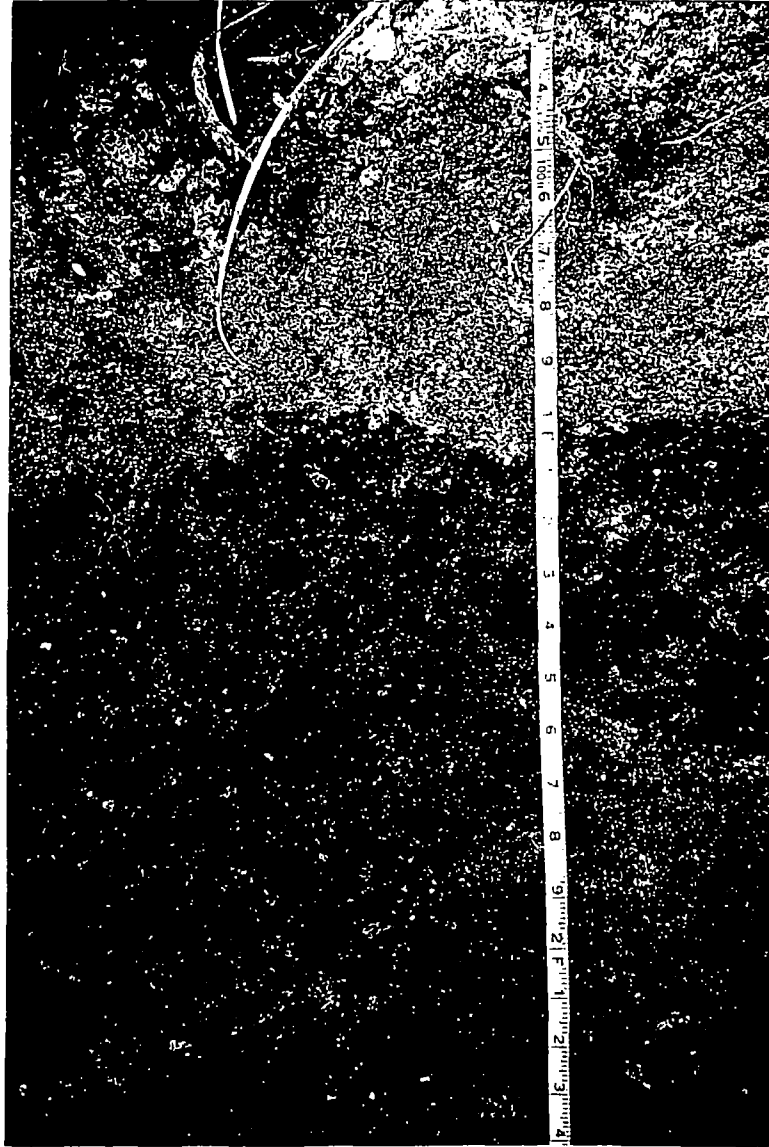
Three to five-feet below grade in TP-2. Fine sand with bedding striations (native material).



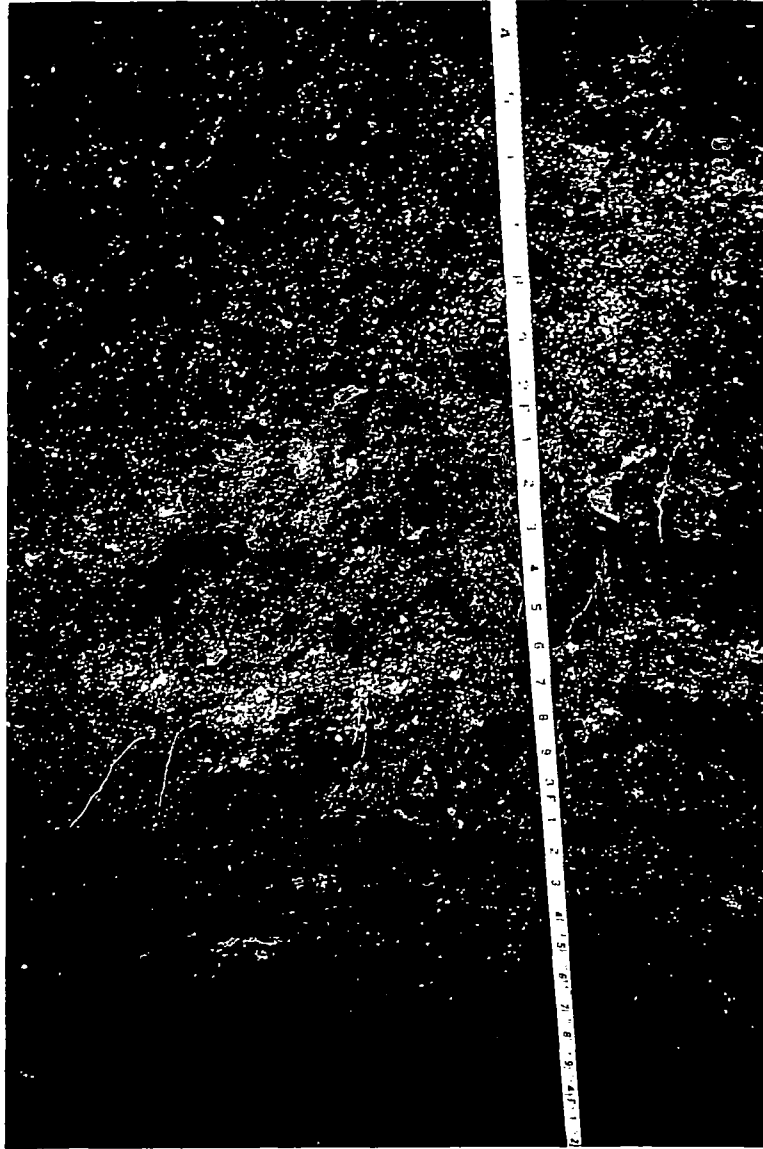
Cross-sectional view of TP-2.



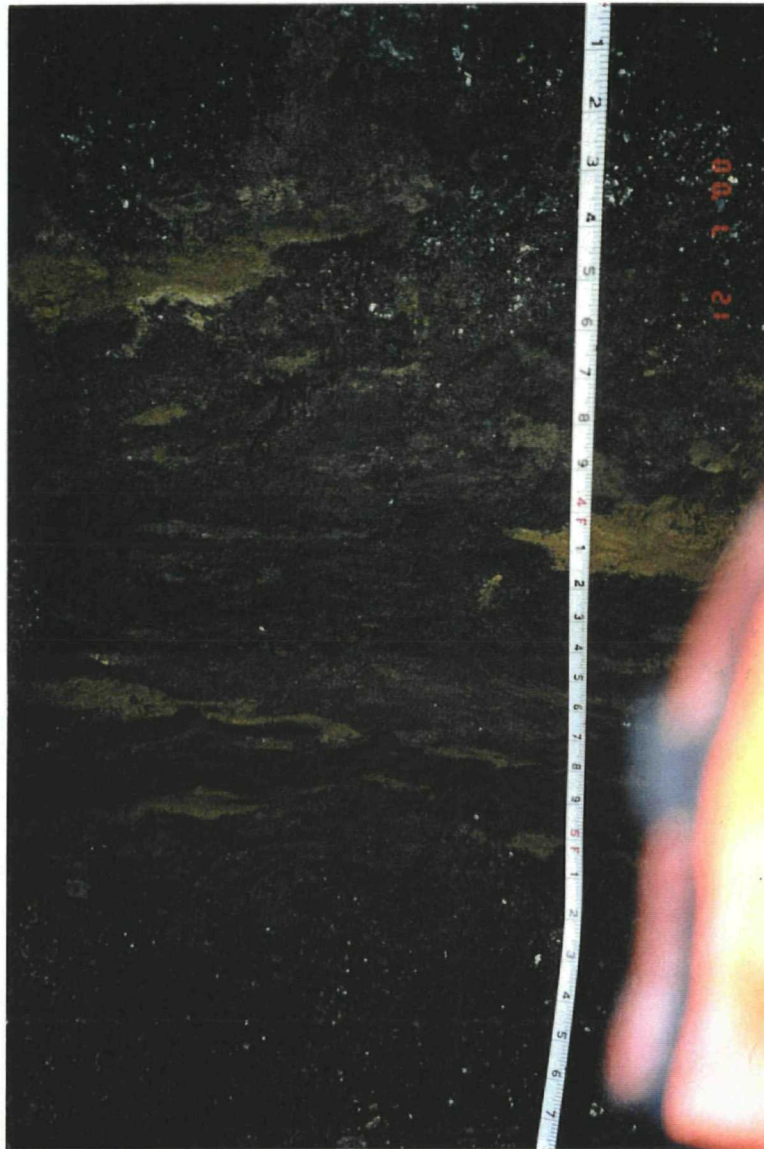
Fine sand from 5 to 8-feet below grade in TP-2. Some cobbles and gravel located 7 to 8-feet below grade.



Topsoil and vermiculite from 0 to 2-feet below grade in Test Pit #3 (TP-3). Cinders located 1 to 2-feet below grade. Sample TP-3-1 collected from 0 to 1-foot below grade.



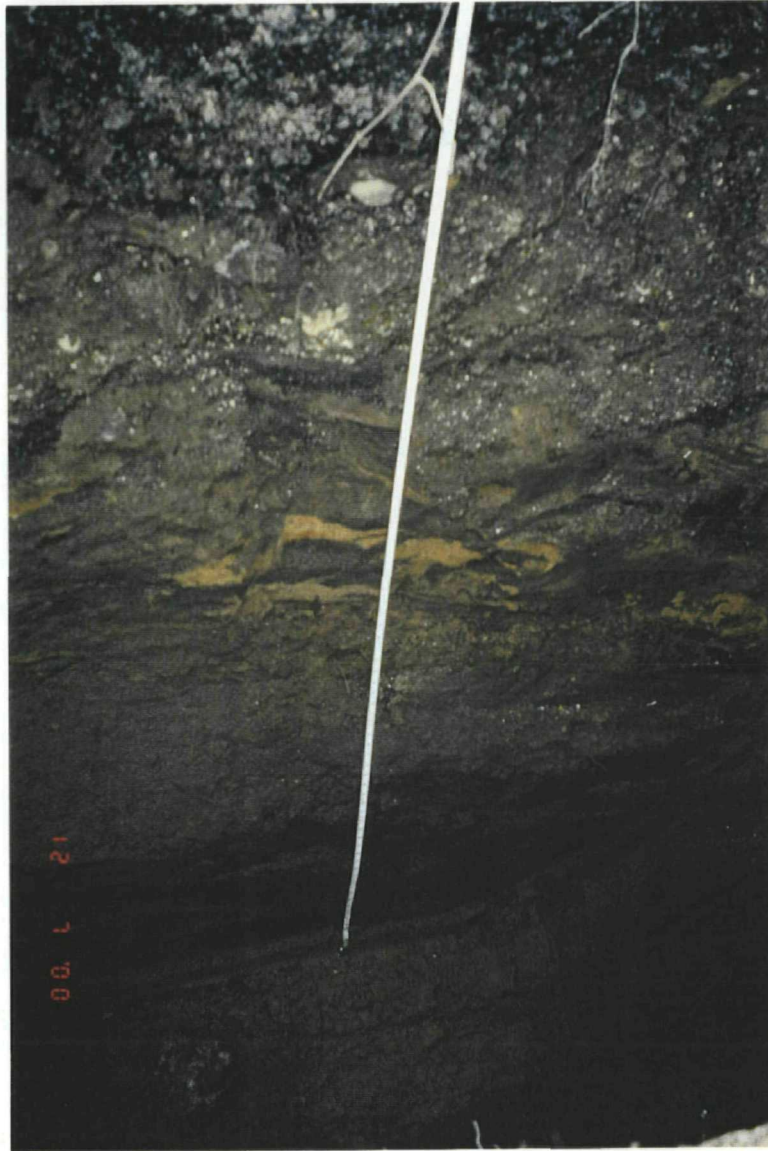
Vermiculite and fill 2 to 3.5-feet below grade in TP-3. Sample TP-3-2 collected from 2 to 3.5-feet below grade.
Fine sand (native) from 3.5 to 8-feet below grade.



Fine sand (brown/black) from 3.5 to 5-feet below grade in TP-3.



Fine sand (dark brown) from 5 to 8-feet below grade in TP-3. Native material 3.5 to 5-feet below grade.



Cross-section of TP-3.